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CAPE FEAR RIVER BASIN

POLLUTION SURVEY REPORT

1957



STATE STREAM SANITATION COMMITTEE
NORTH CAROLINA STATE BOARD OF HEALTH
DIVISION OF WATER POLLUTION CONTROL
RALEIGH

POLLUTION . SURVEY
REPORT NO. 6

THE
CAPE FEAR RIVER BASIN

A study of existing pollution in the Cape Fear River Basin
together with recommended classifications of its waters.

1954 — 1956

STATE STREAM SANITATION COMMITTEE

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INTRODUCTION

A survey of the surface waters of the Cape Fear River Basin was made and this report has been prepared to fulfill the requirements of Section 143-215 of Article 21 of the General Statutes of North Carolina. The area covered by these studies and considered in this report is the entire watershed of the Cape Fear River Basin which lies wholly within the State and which is shown on Map No. 1, entitled "Cape Fear River Basin". For convenience the basin has been divided into its major drainage areas as shown on the accompanying maps entitled "Haw River Drainage Area", Maps Nos. 2 and 3; "Deep River Drainage Area", Maps Nos. 4 and 5; and "Cape Fear River Drainage Area", Maps Nos. 6, 7, 8, and 9.

The data on which this report is based have been developed through actual laboratory studies of existing stream conditions, engineering surveys of municipal and industrial water supplies and waste treatment facilities, from information obtained from existing files, from conferences with persons well acquainted with the area and through visits to the sites under study. Data concerning stream flow and drainage areas were furnished by the North Carolina District Office, Geological Survey of the United States Department of Interior, under terms of a cooperative agreement between that office and the State Stream Sanitation Committee. Other State and Federal agencies have been of considerable assistance in furnishing data regarding land and stream uses.

The laboratory studies on the Haw River and Deep River drainage areas were made during 1954 while the major part of the studies on the Cape Fear River drainage area was made in 1955. Because of the interference of hurricanes along the coastal areas, the studies in this section were continued and completed in 1956; however, special studies were made of waste discharges from certain large industries as well as of stream conditions below certain smaller installations during the early part of 1957, following which the data used herein were compiled.

This report presents information about stream conditions, usage of water resources in the basin, sources of pollution entering these waters, and pollution prevention measures prevailing during the period of study together with recommended classifications for the waters of the basin.

During these studies and the preparation of this report, a sincere effort has been made to present a true picture of the complex water pollution problems within the basin. Likewise, a conscientious effort has been made toward developing reasonable conclusions and recommendations pertaining to the recommended classifications for the various waters in the area. It is hoped that this report will be useful to all concerned with the problem of safeguarding the water resources of the Cape Fear River Basin.

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ACKNOWLEDGMENT

The valuable cooperation and assistance of those agencies and individuals which have contributed to the Cape Fear River Basin studies and the preparation of this report are gratefully acknowledged.

Special recognition is given to the officials of industries and municipalities throughout the basin who furnished data relative to plant operation, waste discharges and treatment facilities employed. Recognition is also given to the Cities of Burlington, Asheboro, Sanford, Fayetteville, and Wilmington for furnishing space and utility services for the mobile laboratory units located in these cities during the period of the survey.

Federal and State agencies from which cooperation and assistance were obtained include the Geological Survey of the United States Department of Interior; the Division of Water Pollution Control of the Public Health Service; the United States Army, Sunny Point Army Terminal; the United States Department of Agriculture, Soil Conservation Service; the United States Corps of Engineers, Wilmington District; the North Carolina Department of Conservation and Development, Commercial Fishery Division; and the North Carolina Wildlife Resources Commission. Assistance was also rendered in numerous instances by City and County Health Departments, County Departments of Agriculture and other agencies and individuals in preserving and developing our water resources. This assistance is hereby acknowledged.

SUMMARY

This report has been prepared to fulfill the requirements of Section 143-215 of Article 21 of the General Statutes of North Carolina.

The area covered by this report encompassing approximately 9,149 square miles is the entire watershed of the Cape Fear River Basin, which includes that portion of the intracoastal waterway extending from the White Oak River Basin to the Lumber River Basin. The estimated population in 1950 was 796,000.

Water uses within the basin include domestic and industrial water supplies; bathing and other forms of recreation; fish, shellfish and wildlife propagation; commercial fishing; agriculture, including stock watering and irrigation; electric power production; disposal of sewage and industrial waste and navigation.

Within the basin there are 25 public surface water supplies serving a population of approximately 378,000 with an average consumption of 39.3 MGD. Also, there are 35 communities that serve a population of approximately 103,000 with an average of 8.3 MGD obtained from ground water sources. Industries have recorded the use of approximately 19.1 MGD from surface supplies and approximately 1.0 MGD from ground supplies for process water. These figures do not include the large amount of water used for cooling by industries, such as electric power steam plants, that is returned to the stream with no ill effects other than an increase in temperature. This water is generally cooled by recirculation and reused. In some cases the amount used exceeds the daily flow in the stream and recirculation becomes mandatory.

There are 143 significant sources of pollution throughout the basin. Of these, 62 are at present discharging untreated wastes directly into the streams, 28 are giving the wastes secondary treatment, and 53 provide only primary treatment. All sources of pollution have a total sewage population equivalent (P.E.) of approximately 1,257,476 before treatment, whereas after treatment, these wastes represent a sewage population equivalent (P.E.) of 929,031 as discharged to the waters of the basin. Thus the overall reduction resulting from treatment amounts to only 26%. This degree of treatment will vary with the different drainage areas. In that section of the main river drainage area, extending from the junction of Haw and Deep Rivers to the Atlantic Ocean, the overall reduction is only 16%, while in the Deep River area where there is a larger percentage of secondary treatment plants the overall reduction is 41%. The reduction in the Haw River area is 36%.

CONCLUSIONS

A thorough review of this report indicates the following:

1. The Cape Fear River Basin is the most industrialized basin in the State, the largest concentrations being centered on the Haw River, the upper Deep River, and the lower section of the Cape Fear River.

2. The waters of the basin in the areas of heaviest concentration of industry and population have been damaged by the discharge of untreated and partially treated sewage and industrial wastes.

3. There is a definite movement of the population from rural areas to the urban areas. This is indicated by the steady growth of the towns and cities and the decrease in the number and size of farms. This development has increased the volume of wastes discharged to the streams, while also increasing the need for clean water for industrial and domestic consumption.

4. The rate of municipal and industrial pollution abatement action has not kept pace with population and industrial growth.

5. The overall reduction in P.E. resulting from waste treatment is only 26%. This indicates that industries and municipalities, where proper treatment of their waste is not provided, should study their problems and initiate definite steps toward providing adequate waste treatment facilities.

6. Industries and municipalities should train their personnel to take better advantage from the standpoint of both maintenance and operation of existing waste treatment facilities.

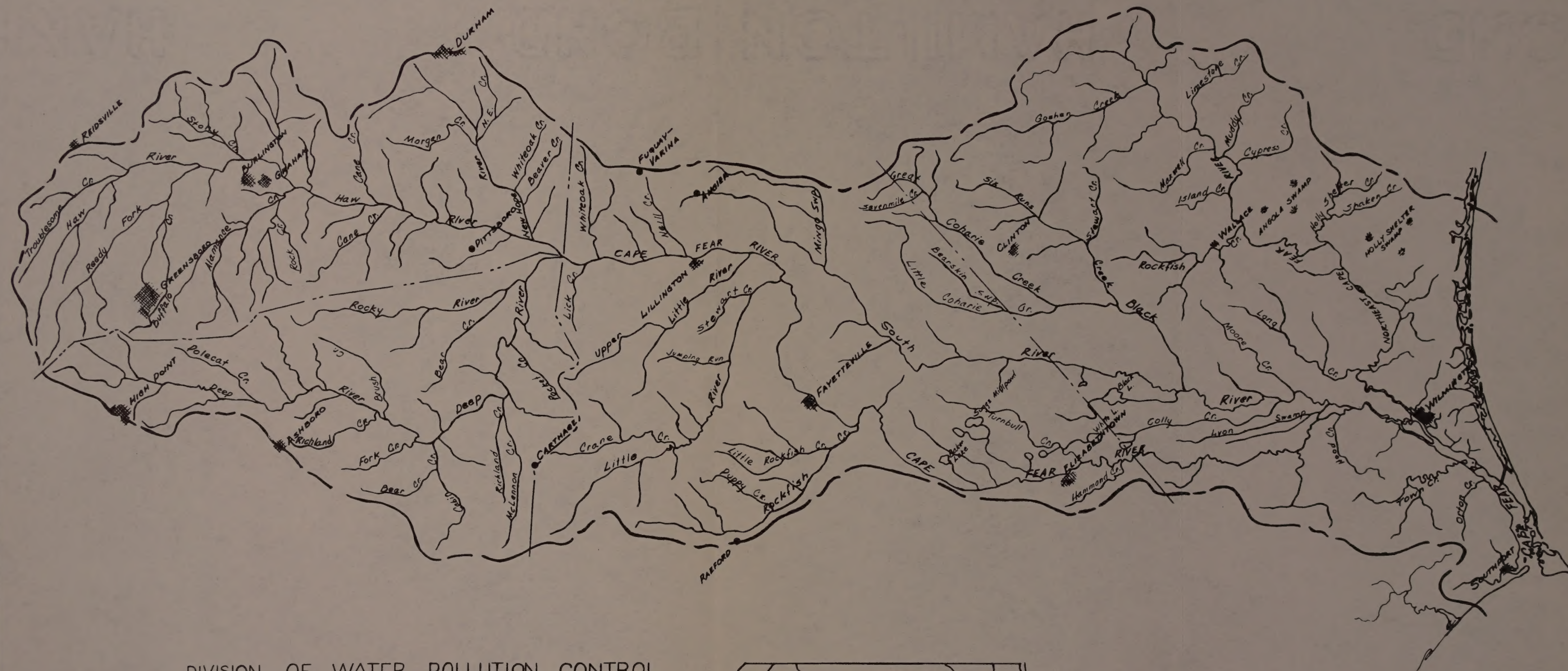
7. There is an abundance of water available in the Cape Fear River Basin, but this must be developed and utilized with the greatest of care in order to have enough clean water for all individual users.

8. The main stem of the Cape Fear River should be classified A-II from the confluence of the Deep and Haw Rivers to the intake at Riegel Paper Corporation, except immediately below Fayetteville and Erwin. This portion should be available as a source of raw water to supply the increasing demands of the area.

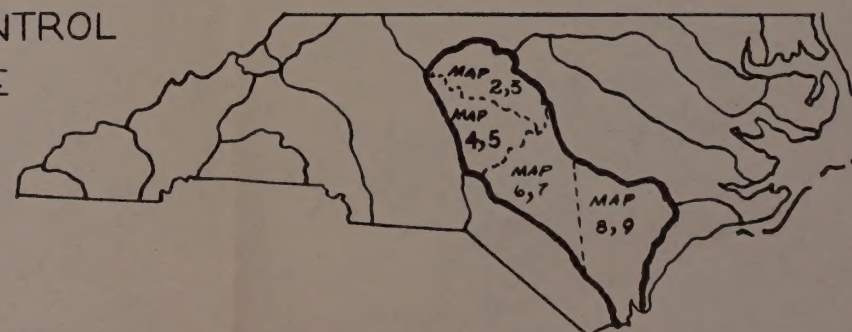
9. There are many locations on the Cape Fear River, both along the inland waters and the coast, that can be developed for recreational uses. The tourist trade is already a great asset to this area and should be further developed.

10. Existing sewage and waste treatment facilities and disposal methods are inadequate to provide sufficient protection for the valuable commercial fisheries in the tidal waters of the Basin.

11. The recommended classifications as shown in Tables 8, 16, and 24 should be adopted in order to protect the "best usage" made of the waters now or contemplated in the foreseeable future.



DIVISION OF WATER POLLUTION CONTROL
 STATE STREAM SANITATION COMMITTEE
 N.C. STATE BOARD OF HEALTH
 RALEIGH, N. C.
 1956



CAPE FEAR RIVER BASIN

MAP 1

THE SURVEY

General

The Cape Fear River Basin is the largest river basin lying wholly within the borders of North Carolina. The physiography of the basin is such that it may very well be divided into three different drainage areas. This report is divided according to these divisions. The sections are designated as follows:

- Section I - Haw River Drainage Area
- Section II - Deep River Drainage Area
- Section III - Main River Drainage Area

The Main River Drainage Area will have two subsections; (1) From the confluence of the Haw River and Deep River to water supply intake at Riegel Paper Corporation; (2) From the water supply intake at Riegel Paper Corporation to the Atlantic Ocean.

Prior to the stream study, a detail survey was made of the water and land uses throughout the basin. This information is given in appropriate tables accompanying the portion of the report covering each drainage area.

Investigations of all sources of pollution, both municipal and industrial, were conducted to obtain information about these wastes. These investigations involved the determination of volumes and characteristics of all sewage and industrial waste, either treated or untreated, being discharged into the waters of the basin. These data are given in appropriate tables for each drainage area.

In addition to the above, conferences were held with County Health Officials, Wildlife Protectors, Soil Conservation Officials, Farm Agents and others concerned with the usage of the waters within the basin.

Sampling Stations and Procedures

The survey includes a program of stream sampling over the entire river drainage area, including all of the major tributaries and the smaller tributaries that were considered significant to the overall study. Particular emphases were placed on those streams receiving appreciable quantities of either sewage or industrial waste; however, sampling stations were also established on streams known to be free of appreciable amounts of sewage and industrial waste in order to establish information relative to normal water quality.

Wherever possible, sampling stations were located both above and below sources of pollution. When necessary, several sampling stations were located below the source in order to locate the point of maximum oxygen depletion and the point of oxygen recovery in the stream.

Samples were collected from the streams after the wastes discharged had reasonable opportunity for dilution and mixture with the receiving waters, and in such a manner as would give a representative sample. Sampling operations were conducted in accordance with the procedures and methods outlined in "Standard Methods for Examination of Water and Sewage", Ninth and Tenth Editions, published by the American Public Health Association, the American Water Works Association and the Federation of Sewage and Industrial Wastes Association. Special equipment was utilized to collect stream samples in

conformity with standard procedures. These collecting devices are designed to prevent aeration of samples intended for dissolved oxygen and B.O.D. determinations. Apparatus and chemical reagents in appropriate field kits were used by the field crews for the determination of dissolved oxygen and water temperature. Other physical features of the stream, including flow, were recorded at the time of sampling.

Hydrological Measurements

Since it is essential to have rate of flow of the stream at the time of sampling, the Raleigh office of the United States Geological Survey worked with each of the field laboratories to secure this information. One of the major functions of the Surface Water Branch of the Geological Survey is collecting flow data throughout the State. In addition to the regularly operated stations that were in the basin, a system of temporary gaging stations was used. Within the basin, there were 23 permanent stations and 296 temporary stations. These stations were read when samples were taken and the rate of flow determined from rating curves made for each site by actually measuring the stream at various stages.

Laboratory Tests and Their Significance

When sampling a stream certain tests must be made at the time of the sampling. These include dissolved oxygen, temperature and observations connected with sight and smell. Other tests are run in mobile laboratories and by the State Laboratory of Hygiene in Raleigh. These tests include pH, alkalinity, hardness, chlorides, B.O.D., M.P.N. of coliform bacteria, color and turbidity and such other determinations as may be required. The analytical results from these tests are found in Tables 7, 15 and 23.

As a background for presentation and discussion of laboratory data, certain rules and regulations were adopted by the State Stream Sanitation Committee for use in classifying and assigning standards of quality and purity to designated waters of the State. For each class of water designated there are accompanying standards of water quality and purity that are applied thereto. These classes for fresh water are A-I, A-II, B, C, D, and E, and for tidal salt waters are SA, SB, SC, and SD. A brief explanation of these classes will be found preceding the tables listing recommended stream classifications.

Under certain conditions, it is necessary to make special tests for specific substances such as toxic materials; however, in the discussion which follows the requirements for stream waters for various uses are considered in terms of the laboratory tests usually made. As far as practical and applicable, all chemical and bacteriological examinations were made in accordance with "Standard Methods for Examination of Water and Sewage", Ninth and Tenth Editions. The routine determinations together with a brief discussion of each are as follows:

Temperature - The temperature of stream waters is useful in indicating the solubility of gases in it, and hence the saturation level of dissolved oxygen, the effect of biological activities, and the effect of viscosity on sedimentation. The level of dissolved oxygen varies inversely with the stream temperature, being lower at higher temperatures and vice versa. Temperature has a marked influence on the rates of natural purification due to biological activity, which is greater at higher temperatures up to about 140°F and diminishes at lower temperatures. As temperature rises, viscosity decreases with a resulting increase in sedimentation, provided other factors do not interfere.

Turbidity - Turbidity is an index of the density of the suspended matter in a sample and is measured by comparison of a sample with a standard suspension of "Fuller's Earth".

Color - The color of water is usually considered due only to substance in solution. The color of natural water is in general due to microscopic plant growths and certain soluble organic materials. Usually very intense and varied colors are produced by certain industrial wastes, such as dyes, etc. Color is measured by comparison of the sample with a prepared standard using a known amount of Platinum-Cobalt in distilled water.

pH Value - The hydrogen-ion concentration of water expressed as pH is a measure of the intensity factors of its acidity or alkalinity. Water having a pH of 7.0 is considered neither acid nor alkaline. Higher values indicate the presence of alkaline earth salts and lower values the presence of acids or acid salts. In North Carolina the pH of most of the streams unaffected by sewage or industrial wastes will vary from 6.0 to 7.5. Swamp water and certain other natural waters may have a lower range. For normal fish life the pH range should be within the limits of 4.3 to 8.5.

Alkalinity - The alkalinity of natural water represents its content of carbonates, bicarbonates, hydroxides, and sometimes borates, silicates and phosphates. It is measured by titrating with a standard acid solution to certain standard hydrogen-ion concentrations. The results are expressed in parts per million (ppm) of Calcium Carbonate. Within normal limits, the alkalinity and hydrogen-ion concentration have little sanitary significance, but they are of value in handling industrial wastes and in controlling the various waste treatment processes.

Hardness - The hardness of natural water consists largely of calcium and magnesium, although measurable concentrations of iron, aluminum, manganese, strontium and zinc in some waters must be taken into consideration. Hardness is expressed in ppm as Calcium Carbonate and is a measure of the soap-consuming capacity of water. While the hardness of water has no sanitary significance, extremes may indicate the presence of certain types of industrial waste or the intrusion of salt water. It also has value in the study of the effects of toxic waste.

Chloride (Cl) - The determination of chloride in water or waste is for the purpose of defining the presence or absence of salt. It is expressed in ppm in terms of the Cl ion. Normal fresh waters are very low in chloride and excessive amounts may indicate the presence of sewage or certain types of industrial waste. Water containing chloride in excess of 250 ppm is usually unsatisfactory for public water supply purposes, because of the salty taste, and may indicate the intrusion of salt water. The presence of large amounts of chloride in brackish or salt water is significant in relation to the solubility of oxygen, as the level of dissolved oxygen in such waters varies inversely with its chloride content.

Dissolved Oxygen (D.O.) - Dissolved Oxygen represents the amount of oxygen dissolved in water. This is one of the most valuable analytical measurements of the condition of a given water. A water is saturated when it contains as much oxygen as it can hold and undersaturated when it does not contain as much. Under certain conditions the water can become supersaturated. In relatively clean streams, the dissolved oxygen content tends to remain at or near saturation. Dissolved oxygen is

essential to natural purification of the stream as well as maintenance of fish and other aquatic life. In natural streams the dissolved oxygen is used to satisfy the biochemical oxidation of organic wastes, but tends to be replaced by absorption from the atmosphere and by photosynthetic action of certain green plants. A deficiency of dissolved oxygen in a stream indicates the presence of polluting substances which cause a reduction of the oxygen in the stream. The degree of deficiency is a measure of the deoxygenating effect of a particular waste, and hence an index to the degree of pollution present in the stream. Where a stream receives wastes at a single point and they are well mixed, the dissolved oxygen content tends to follow a typical sag curve on the basis of time, temperature, oxygen demand and rate of reaeration of the stream which depends partially upon its turbulence.

In North Carolina studies indicate that a dissolved oxygen minimum of 5.0 ppm is necessary to support trout and 4.0 ppm for other types of game fish. Fish life may survive at dissolved oxygen levels of 2.0 or 3.0 ppm, but it is considered that at least 4.0 ppm is necessary to permit the proper breeding and self-maintenance of the more desirable forms of fish.

Five-day Biochemical Oxygen Demand (B.O.D.) - The B.O.D. test is the most important made in sanitary analyses to determine the polluting power, or strength, of sewage or organic industrial waste. It serves as a measure of the degree of treatment needed for successful disposal of the polluting substance. The standard test involves the incubation of sealed samples of water or waste for five days at a temperature of 20°C and the measurement of the loss of dissolved oxygen during the period of incubation. The loss represents the 5-day 20°C B.O.D. of the sample. The B.O.D., therefore, is a measure of the amount of dissolved oxygen that may be expected to be absorbed from a stream in five days at 20°C in order to satisfy the biological and chemical oxidation of the organic pollutants carried in the streams at the time of the sampling. There is usually a definite relationship between the dissolved oxygen content and the B.O.D. Generally in a stream below a source of pollution, it is noted that the D.O. is reduced as the B.O.D. is increased. As natural purification takes place, the D.O. will decrease to the point of the oxygen sag from whence it will begin to increase. The B.O.D. will continue to decrease. This change continues, other factors being the same, until the D.O. and the B.O.D. become normal, indicating that the stream has recovered from the effects of the initial pollution.

The Most Probable Number (MPN) of Coliform Bacteria - The coliform content is used as a general index of the sanitary condition of a stream. This determination shows the approximate density of a group of bacteria which are always present in large numbers in sewage and are relatively few in numbers in other stream pollutants. Coliform bacteria are normal inhabitants of the intestines of all warm blooded mammals and are discharged in very large numbers in human feces, which constitute the principal source of these bacteria in sewage.

The most important use of the coliform content is evaluating the safety of water as a source of public water supply, as a suitable bathing area and for shellfish culture.

The recommended standards for surface waters to serve as a source of public water supply with various types of treatment are specified by the United States Public Health Service. These standards designate the

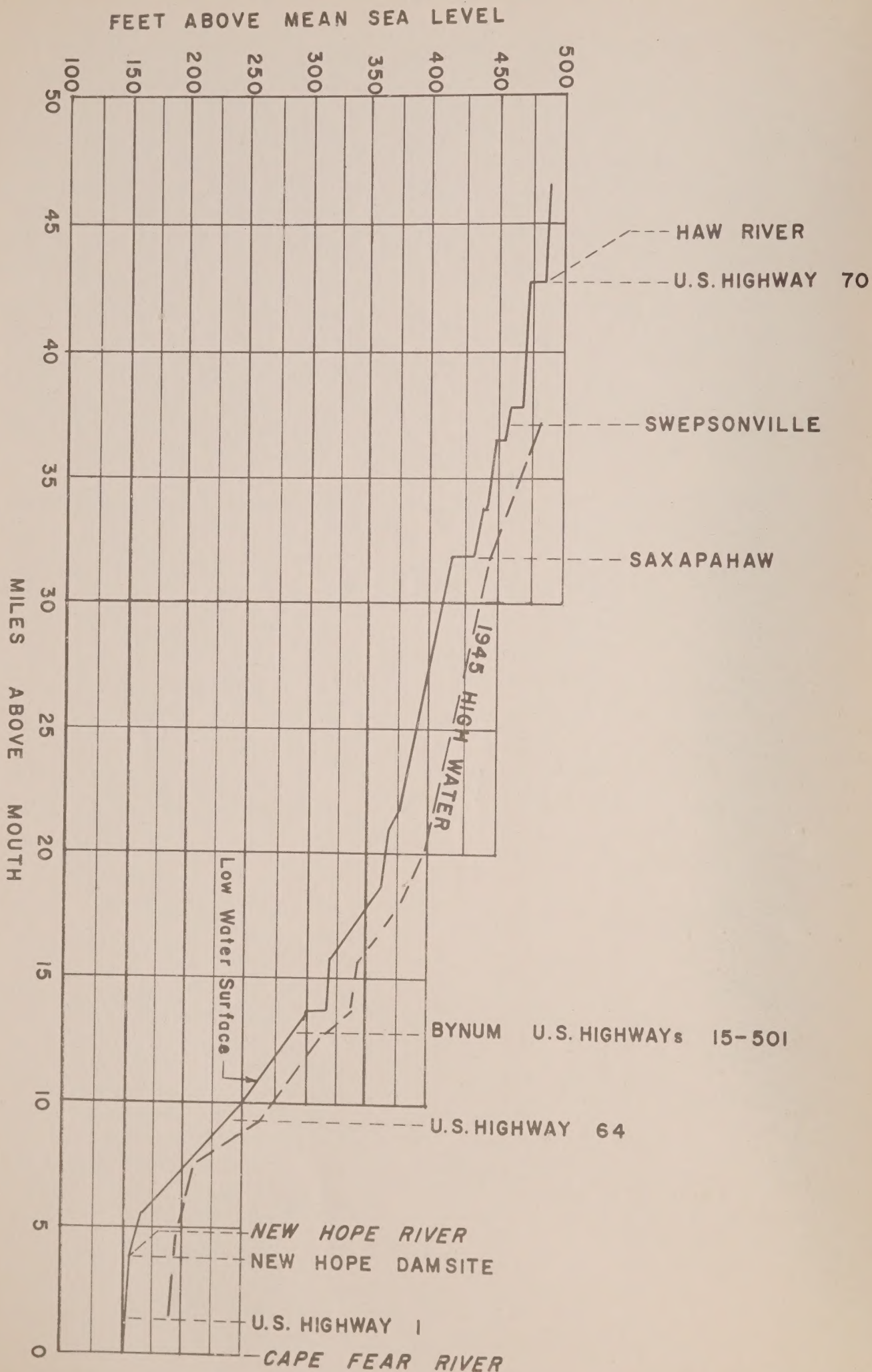
following limiting monthly arithmetical average MPN of coliforms per 100 ml.: (1) For waters requiring only simple chlorination or its equivalent - not more than 50 MPN: (2) For waters requiring complete rapid sand filtration, or its equivalent with continuous post-chlorination - average not over 5,000 MPN in one month and not exceeding this number in 20% of the samples examined in any one month; (3) Waters requiring the above complete treatment with additional auxiliary treatment - exceeding 5,000 MPN in more than 20% of the samples examined during any month and not exceeding 20,000 MPN in 5% of samples examined during any one month; (4) Over 20,000 MPN in more than 5% of the samples - unfit for treatment.

There are no generally recognized standards for the classifications of bathing waters with respect to their coliform bacteria content. Coliform bacteria standards have been proposed that vary from an MPN value per 100 ml. of not over 50 to not over 3,000. In considering the suitability of water for public bathing, a sanitary survey of the drainage area and the supervision given by controlling health authorities should be considered as well as the bacteriological content of the water.

Throughout this report, especially in the tables, certain abbreviations have been used. These are listed below:

B.O.D.	- Biochemical Oxygen Demand
cfs	- Cubic Feet Per Second
D.O.	- Dissolved Oxygen
D.S.	- Domestic Sewage
I.W.	- Industrial Waste
M.	- Municipal
M.G.D.	- Million Gallons Per Day
M.P.N.	- Most Probable Number
P.	- Private
ppm	- Parts Per Million
P.E.	- Domestic Sewage Population Equivalent
S.D.	- Sanitary District

Condensed Profile — Portion of HAW RIVER



SECTION I - HAW RIVER DRAINAGE AREA

GENERAL DESCRIPTION

The Haw River is the largest tributary of the Cape Fear River. It has its source in the northwestern edge of Guilford County and flows first in a northeasterly direction, then easterly and then finally in a southerly direction to its junction with the Deep River at the Chatham-Lee County line to form the Cape Fear River.

The New Hope River is the only large tributary to Haw River. It heads in central Orange County as New Hope Creek, flows east for some distance, then flows south to join the Haw River, 4.8 miles from its confluence with the Deep River. From its source to the mouth of Morgan Creek, it is identified as New Hope Creek, while the remainder of the stream to Haw River is called New Hope River. Other smaller, but important tributaries to the Haw River are Troublesome Creek, Reedy Fork and Alamance Creek.

This section of the report is concerned with the Haw River and its tributaries and will be referred to throughout the report as the Haw River Drainage Area. It drains 1,526 square miles comprising portions of eight counties. The following tabulation lists these counties together with information relative to their total area and the estimated area of the watershed within each.

<u>County</u>	<u>Total Area</u> <u>(Sq. Miles)</u>	<u>Est. Area</u> <u>In Basin</u> <u>(Sq. Miles)</u>
Alamance	434	426
Caswell	435	46
Chatham	707	286
Durham	299	83
Forsyth	424	4
Guilford	651	465
Orange	398	183
Rockingham	572	93
	3,920	1,526

Topography

The Haw River Drainage Area is wholly within the Piedmont Plateau region, just above the fall line in the state. The river heads at an elevation of approximately 1,000 feet and falls rapidly to its confluence with the Deep River at an elevation of 158 feet as shown on condensed profile on page 18. The upper two-thirds has a fairly uniform gradient and an average fall of 6.5 feet per mile. In the lower third, the fall varies from 18 feet to 0.5 feet per mile. The fall of the river is broken in several places by small dams.

There are no outstanding breaks in the generally rolling characteristics of the land. The upper sections of the Main Haw River and larger tributaries are slightly hilly in some sections but this is an exception to the rule. The rolling hills become more gentle toward the lower section of the river. There are no unusually large flood plains along the banks of the River.

Cover and Climate

This section of the Cape Fear River Basin is probably the most heavily developed and populated of the entire basin. Approximately 70% of the total land area is in farms, of which about 57% represents forest lands. This includes all cultivated, uncultivated, and pasture land.

The mean temperature of the Haw River Drainage area can be described as rather moderate. The mean temperature for the year 1954, the year of the stream study was 60.1°F. The mean temperature for the long term period of 1931 - 1952 was 60°F, thus indicating no departure from the long term average. There were no extremes, either high or low during the time of the study. The effects of the formation on ice on the streams are negligible.

The average rainfall for the drainage area as a whole in the year 1954 was 43.8 inches due to the heavy rains in the early months of the year and the excessive rains at the time of Hurricane Hazel on October 15. Although this represents a deficiency of 1.7 inches when compared to the long term average, it still does not show the entire picture. Almost all of the weather stations in the area reported deficiencies during the period of April through December with some stations reporting deficits of as much as three inches per month. This was clearly indicated by diminishing stream flows which at times resulted in dry streams. The variation of average rainfall throughout the area is very small, varying from 40.2 inches at Durham to 52.1 inches at Moncure near the mouth of the river. The snowfall was so small that it is of no importance.

Stream Flow

Throughout the Haw River Drainage Area, there were 103 gaging stations established to obtain stream flows in connection with the sampling program. Of these, nine were permanent active stations maintained and operated by the United States Geological Survey. The permanent stations are located as follows: (1) Haw River near Benaja, North Carolina; (2) Horsepen Creek at Battle Ground, North Carolina; (3) Reedy Fork near Gibsonville, North Carolina; (4) South Buffalo Creek near Greensboro, North Carolina; (5) North Buffalo Creek near Greensboro, North Carolina; (6) Stony Creek near Burlington, North Carolina; (7) Haw River at Haw River, North Carolina; (8) Haw River near Pittsboro, North Carolina; (9) New Hope River near Pittsboro, North Carolina.

Flow data for each of these stations are available through the District Office of the United States Geological Survey, Raleigh, North Carolina. Maximum, average and minimum flows, the exact location of the above mentioned stations, and the years for which records are available at each of these stations as taken from Water-Supply Paper 1333 are indicated below.

Haw River near Benaja, North Carolina

Water stage recorder at altitude of 629 feet above sea level. Located at lat. 36° 15', long. 79° 34' on left bank 200 feet upstream from site of old High Rock Mill, 500 feet upstream from highway bridge, half a mile upstream from county line, 6 miles downstream from Troublesome Creek, and 6 miles east of Benaja, Rockingham County. Drainage area 168 sq. miles. Records available, October 1928 to September 1954. Maximum discharge 12,300 cfs September 25, 1947. Average discharge for 26-year period, 163 cfs. Minimum discharge 1.4 cfs September 30, 1954. Records good.

Horsepen Creek at Battle Ground, North Carolina

Water stage recorder and Parshall flume. Datum of gage 737.94 feet above mean sea level. Located at lat. $36^{\circ} 08' 34''$ long. $79^{\circ} 51' 24''$ on right bank 10 feet downstream from highway bridge, 0.5 mile downstream from bridge on U. S. Highway 220, three-quarters of a mile north of Battle Ground, Guilford County, and 2 miles upstream from mouth. Drainage area 15.9 sq. miles. Records available, November 1925 to July 1931 (fragmentary November 1925 to October 1928) May 1934 to September 1954. Maximum discharge 6,400 cfs September 24, 1947. Average for 21-year period 14.9 cfs. Minimum discharge 0.7 cfs July 24, 1926. Records fair except for period of no gage height record, which are poor.

Reedy Fork near Gibsonville, North Carolina

Water stage recorder. Datum of gage is 626.88 feet above mean sea level. Located at lat. $36^{\circ} 11'$, long. $79^{\circ} 37'$ on right bank a quarter of a mile downstream from Huffins Mill, $1\frac{1}{4}$ miles upstream from Buffalo Creek, and 6 miles northwest of Gibsonville, Guilford County. Drainage area 133 sq. miles. Records available, September 1928 to September 1954. Maximum discharge 11,600 cfs September 25, 1947. Average for 26-year period 112 cfs. Minimum discharge 0.5 cfs September 19, 1953. Records good. Flow partly regulated since 1923 by Lake Brandt (capacity 113,256,000 cu. ft.) 14 miles above station and since 1943 by Richland Lake 12 miles above station.

South Buffalo Creek near Greensboro, North Carolina

(Formerly Buffalo Creek near Greensboro, North Carolina)

Water stage recorder. Datum of gage is 696.2 feet above sea level. Located at lat. $36^{\circ} 03' 37''$, long. $79^{\circ} 43' 33''$ on left bank 5 feet downstream from bridge on McConnell road crossing, 3.8 miles east of Post Office in Greensboro, Guilford County, and 6 miles upstream from North Buffalo Creek. Drainage area 32.8 sq. miles. Records available, August 1928 to September 1954. Prior to October 1953, published as Buffalo Creek near Greensboro, North Carolina. Maximum discharge 10,000 cfs July 15, 1949. Average for 26-year period 37.6 cfs. Minimum discharge 0.2 cfs October 2, 1930. Records fair. Sewage from Greensboro enters above this station affecting low water flow.

North Buffalo Creek near Greensboro, North Carolina

Water stage recorder with concrete control. Altitude of gage 679 feet. Located at lat. $36^{\circ} 07' 13''$, long. $79^{\circ} 42' 30''$ on left bank 5 feet downstream from highway bridge, 4.2 miles upstream from mouth and 5.8 miles northeast of Post Office in Greensboro, Guilford County. Drainage area 36.4 sq. miles. Records available August 1928 to September 1954. Maximum discharge 6,000 cfs September 25, 1947. Average for 26-year period 45.7 cfs. Minimum discharge 1.6 cfs August 28, 1932. Records fair. Diurnal fluctuation at low flow caused by mills above station. Diversion into basin from Greensboro and Proximity Mills enters above station.

Stony Creek near Burlington, North Carolina

Water stage recorder. Located at lat. $36^{\circ} 11'$, long. $79^{\circ} 25'$ on right bank a quarter of a mile upstream from highway bridge, half a mile upstream from Buttermilk Creek, $4\frac{1}{2}$ miles upstream from mouth, and 6 miles north of Burlington, Alamance County. Drainage area 44.2 sq. miles. Records available July 1952 to September 1954. Maximum discharge 1,670 cfs February 15, 1952. Minimum discharge no flow recorded at times in each year. Records fair except those below 1 cfs and above 500 cfs, which are poor.

Haw River at Haw River, North Carolina

Water stage recorder. Datum of gage 471.69 feet above sea level. Located at lat. $36^{\circ} 05'$, long. $79^{\circ} 22'$ on left bank at Town of Haw River, Alamance County, 650 feet downstream from Southern Railway bridge, and 3 miles downstream from Stony Creek. Drainage area 599 sq. miles. Records available October 1928 to September 1954. Maximum discharge 37,000 cfs September 18, 1945. Average for 26-year period 581 cfs. Minimum discharge 3 cfs September 5, 1930. Records good. Large diurnal fluctuation and some regulation for short periods at low flow caused by power plants above station. City of Burlington diverted an average of 6.2 cfs for municipal supply from basin above station during water year 1954.

Haw River near Pittsboro, North Carolina

Water stage recorder. Datum of gage is 180.06 feet above mean sea level. Located at lat. $35^{\circ} 42'$, long. $79^{\circ} 05'$ on left bank 100 feet upstream from Robeson Creek, 2 miles downstream from bridge on U. S. Highway 64 and 5 miles east of Pittsboro, Chatham County. Drainage area 1,310 sq. miles approximately. Records available November 1928 to September 1954. Maximum discharge 79,000 cfs during night of September 18-19, 1945. Average for 26-year period 1,241 cfs. Maximum discharge 3.1 cfs September 13, 1954. Records good. Considerable diurnal fluctuation and some regulation for short periods at low flow caused by power plants above station.

New Hope River near Pittsboro, North Carolina

Water stage recorder. Datum of gage is 176.42 ft. above mean sea level. Located at lat. $35^{\circ} 44'$, long. $79^{\circ} 02'$ on right bank of downstream side of bridge on U. S. Highway 64, a quarter of a mile downstream from Whiteoak Creek, and $8\frac{3}{4}$ miles east of Pittsboro, Chatham County. Drainage area 285 sq. miles. Records available January 1949 to September 1954. Maximum discharge 7,900 cfs March 5, 1952. Minimum discharge 2.0 cfs September 4, 1953. Records fair. City of Durham discharged sewage into basin above station from Neuse River.

ECONOMIC DEVELOPMENT

Population

Based on the 1950 census, the estimated population within the Haw River Drainage Area was 268,000. In comparison, an estimate of the 1940 census listed population of 221,000 for the area. This is an overall increase of 21% in the area while the overall increase in the State was only 13.7%. This large population and significant increase can be partially attributed to the fact that the Haw River Drainage Area is one of the most highly developed areas in the State. The basin contains four municipalities with population of 182,000 or 68% of the total.

The principal industry of the area is textiles with large centers located at Greensboro and Burlington and other smaller centers scattered throughout the area. However, there are other occupations of great importance. Durham and vicinity, which are partially in the area, are an important tobacco center. Agriculture plays an outstanding part in the economic life of such counties as Orange, Alamance, Chatham, and parts of Durham.

An economic survey of the State made in 1955, indicated that the average per capita income of the counties lying wholly or partially within the drainage area during that year was \$1,026. The total effective income for the same year for the area was \$775,089,000. During the same year the farm income was \$65,126,000. A survey made in 1947 listed the value of products manufactured in the area as \$321,034,000. Since only 1% of Forsyth County is within the area, it was not included in the above totals.

Electric Power

Electric power utilized in the Haw River Drainage Area is supplied by two major companies. In the upper section it is supplied by Duke Power Company while the downstream section is supplied by Carolina Power and Light Company. There are no major power generating units on the Haw River; however, there are three private industries that operate their own power plants. These are listed below.

Power Plant Installation

<u>Name</u>	<u>Type</u>	<u>Owner</u>	<u>KW Capacity</u>
Bynum	Hydro	O'Dell Manufacturing Company	187
Saxapahaw	Hydro	Sellers Manufacturing Company	850
Swepsonville	Hydro	Virginia Mills, Inc.	935

Forest Resources

Approximately 57% of the total land area in the Haw River Drainage Area is forest lands. A total of only 25,600 acres of this is publicly owned while the remainder is privately owned. Following is a tabulation of major forest uses as published in "Forest Statistics for the Piedmont of North Carolina, 1956, Forest Survey Release No. 48". While all counties are only partially within the drainage area, the figures are totals for the counties listed.

<u>County</u>	<u>Total Forest Land (Acres)</u>	<u>Public Forest Land (Acres)</u>	<u>Fulpwood Production 1955 Standard Cords</u>	<u>Saw Timber in Million Board Feet</u>
Alamance	132,100	100	5,488	340.1
Caswell	170,700	12,400	5,091	498.8
Chatham	354,500	1,700	26,251	947.9
Durham	117,700	5,000	18,550	374.2
Guilford	177,000	4,600	890	488.8
Orange	156,600	1,700	10,453	437.4
Rockingham	195,500	100	4,670	174.0
Total	1,304,100	25,600	71,393	3261.2

Agriculture

Although the Haw River Drainage Area is very highly industrialized, there is considerable land used for agriculture and many people who devote all their time to farming. In 1954, the average size farm in the area was 77.5 acres. With the exception of Caswell County, the average size farm has decreased since 1950. This indicates that the population is gradually moving from the farm to the urban areas. Along many of the streams the land is used for crops and pastures. Although at the time of the basin study the streams were being used very little for livestock watering and irrigation, there was a definite trend toward more such utilization of the water. The most important crops grown in the area are corn, tobacco, hay and some cotton. The figures below were obtained from the 1954 Census of Agriculture by the U. S. Department of Commerce.

<u>County</u>	<u>No. of Farms</u>	<u>Acres Harvested</u>	<u>Land Under Irrigation (Acres)</u>	<u>Cash Value of 11 Principal Crops 1954</u>
Alamance	2,749	56,144	257	\$ 5,164,130
Caswell	2,899	50,473	574	8,908,770
Chatham	2,844	48,797	144	3,847,710
Durham	1,622	23,578	293	3,211,590
Guilford	4,518	79,338	619	11,023,850
Orange	1,939	36,391	132	3,205,170
Rockingham	4,188	67,187	635	13,381,860
Total	20,759	361,908	2,654	\$ 48,743,080

Dairy, Livestock and Poultry

The Haw River Drainage Area contains some of the larger dairy producing counties. The soil, climate and terrain are well suited for producing hay crops. This is of primary concern to the dairy farmers and is one of the contributing factors to this important industry. The following data were taken from the 1954 Census of Agriculture by the U. S. Department of Commerce:

<u>County</u>	<u>Cattle and Calves Sold Alive</u>	<u>Chickens Sold</u>	<u>Hogs and Pigs Sold Alive</u>
Alamance	5,626	636,467	5,634
Caswell	2,244	51,318	2,857
Chatham	7,198	6,206,528	11,979
Durham	2,015	143,553	2,029
Guilford	7,727	428,923	7,322
Orange	4,171	310,528	5,430
Rockingham	<u>3,435</u>	<u>76,935</u>	<u>2,758</u>
Total	32,416	7,854,252	38,009

Mineral Resources

There are very few mineral resources in the Haw River Drainage Area; however, there are small deposits of both metallic and non-metallic minerals. Copper is found in small quantities in some sections of Guilford and Chatham counties. Iron ores are found in several different forms. Limonite, which contains 60% iron, is found in small quantities in Chatham County. Titaniferous magnetite is abundant in Guilford and Rockingham Counties, but no attempt has been made to mine it as iron ore. There has, however, been some attempt to mine it for titanium. Although there is an abundance of the ore present, the titanium content is so low that the attempts were not profitable. Of the non-metallic minerals found in the area, probably the most widely distributed are the clays used in pottery and brick manufacturing. There are small quantities of emery found in Guilford County. Of the precious stones, garnet is probably the only one of any quantity that is found in this area. In Guilford County, there are several quarries where granite has been mined successfully. A few of these quarries are still operating, while others have been abandoned.

Fish and Wildlife

Fishing and hunting are not engaged in very extensively in the Haw River Drainage Area. Chatham County is the only county that has reported any streams being stocked with fish. The only fish that are found in quantity are bass, bream, catfish, suckers, and carp. Most of the streams in the area are reported to be either too small or too polluted to support fish life. Hunting in this area is restricted to individual hunting parties because of the scarcity of game available and because small game is the only type found.

State Parks

The only state park in the Haw River Drainage Area is "The Battle of Alamance State Historical Park". This park, containing 40 acres, is located in Alamance County four miles southeast of the Town of Alamance. The park, located on the site of a famous Revolutionary War battle, is yet to be developed.

Recreation

Although there is only one state park, there are several privately and publicly owned camps throughout the area. These camps are:

Alamance County

Camp Pioneer is a privately owned permanent camp having a capacity for 47 boys or girls, or both. The water supply is obtained from springs, while the sewage is disposed of by pit privies. Bathing facilities are provided by an artificial lake.

Guilford County

Old Mill Scout Camp is a permanent camp owned by Boy Scouts of America and is operated from June to July with facilities for 150 per week. The water supply is obtained from a well and sewage is disposed of by septic tanks with nitrification lines. An artificial lake, owned by the camp, is used for bathing.

Camp Herman is a permanent Y.M.C.A. camp that is owned and operated by the Cone Mills Corporation of Greensboro. It is open during the months of June, July and August. There are facilities available for 150 boys and girls. Waste is disposed of by septic tanks with nitrification lines. An impoundment on a tributary to Reedy Fork is used for bathing.

General Green Council Boy Scout Camp is a permanent camp located on Benaja Creek which is used for bathing. The water supply is obtained from wells and the sewage is disposed of by septic tanks and nitrification lines.

Orange County

Camp New Hope is a permanent camp owned and operated by the Orange County Presbytery. The water is supplied by wells, while the sewage is disposed of by septic tanks and nitrification lines. There are two lakes on the camp property, one of which is used for bathing.

Rockingham County

Camp Chinqua Penn is owned and operated by the Girl Scouts of America. It is a permanent camp with facilities for 80 girls. The water supply is obtained from wells, while sewage is disposed of by a septic tank with nitrification lines and pit privies.

Transportation

This section has possibly the best highway network in the entire State. This is due to the fact that the metropolitan areas of Greensboro, Burlington, and Durham are located within the area while High Point and Raleigh are situated just outside of the drainage basin. The area is served by three of the State's principal highways, U. S. 29, U. S. 70, and U. S. 421. There is also a network of improved excellent farm-to-market roads. Bus travel is excellent between the large cities.

There are three major railroad companies serving this area. These are the Southern Railroad, the Seaboard Airline Railroad and the Norfolk and Southern Railroad.

Due to shallow waters and the private power dams along the Haw River, no section of the river is navigable in so far as large boats and barges are concerned.

In order to simplify the presentation of the survey findings relative to present and potential land and water uses, the Haw River has been divided into five segments which are fairly well defined from the standpoint of land and water usage characteristics. Significant water and land uses and data relative to these uses are presented below for each location where there is a specific use made of the water. Additional data are given in Table No. 2, Public Surface Water Supplies; Table No. 3, Industrial Surface Water Supplies; Table No. 4, Public Ground Water Supplies; Table No. 5, Industrial Ground Water Supplies; Table No. 6, Points of Significant Sources of Pollution; and Table No. 8, Recommended Classifications.

SEGMENT I. HAW RIVER AND ITS TRIBUTARIES FROM SOURCE TO MOUTH OF TROUBLESOME CREEK

This segment of the river is free of any significant pollution from domestic sewage or industrial waste. The City of Reidsville obtains its raw water supply from an impoundment on Troublesome Creek. After treatment, the City supplies an average of 1.0 MGD to 12,600 people. The river above the mouth of Troublesome Creek is used primarily for agriculture.

SEGMENT II. HAW RIVER AND ITS TRIBUTARIES FROM MOUTH OF TROUBLESOME CREEK TO N. C. HIGHWAY 87 BRIDGE AT ALTAMAHAW

The principal use of the small tributaries in this segment is for agriculture, although some fish may be found in the headwaters and undeveloped sections of the streams. The City of Burlington has an emergency water intake on the main stem above the mouth of Reedy Fork from which water is pumped into the headwaters of Buttermilk Creek and flows into the city reservoir on Stoney Creek. The only significant point of pollution in this segment is described as follows:

City of Reidsville. The City is served by three sewage treatment plants, two of which are in the Roanoke River Basin while one is in the Cape Fear River Basin. In 1954 the City was discharging sewage and industrial waste from an old septic tank into Little Troublesome Creek. The plant influent had a P.E. of 9,000 while the effluent had a P.E. of 7,800. The inadequately treated effluent created a foul condition in the creek and depleted the D.O. to less than 1 ppm at Sampling Station 4 located a short distance downstream from the septic tank. Approximately 4 miles downstream from this sampling station, the water was only 55% saturated with oxygen and the average coliform MPN value was over 100,000 per 100 ml. In 1957 the City completed and placed in operation a new secondary type sewage and industrial waste treatment plant. This plant was approved by both the State Board of Health and the State Stream Sanitation Committee as being adequate to serve the present needs of the City and to protect the stream for existing uses, including its use as a supplemental source of water supply by the City of Burlington.

SEGMENT III. HAW RIVER AND ITS TRIBUTARIES FROM N. C. HIGHWAY 87 BRIDGE TO MOUTH OF DRY CREEK NEAR BYNUM

This segment flows through what is possibly the most highly developed area on the main stem. The upper section of this segment receives pollution

from many sources. Very little fishing is done in this section. Located on the river and its tributaries are three public bathing areas, six public water supplies and twenty-seven points of pollution. The City of Greensboro obtains raw water from Lake Brandt on Reedy Fork and Hamburg Lake on Brush Creek. These lakes are fed by a series of small streams tributary to Reedy Fork, and serve as the source of public water supply for a population of 90,000 using an average of 9.56 MGD. The water is treated through a conventional treatment plant followed by the addition of post chlorine, lime, carbon and fluoride. The City of Burlington obtains water from Stoney Creek. Although some of the water is pumped from Haw River in times of emergency, most of it is obtained from the Stoney Creek watershed which is free of significant pollution. After receiving conventional type treatment, it supplies a population of 30,000 with an average of 3.96 MGD. Copland Converting Company takes an average of 0.045 MGD of water from Stoney Creek just below the dam at Lake Burlington. In addition to the conventional treatment, the water is softened. The Town of Mebane obtains water from an impoundment on Mill Creek. The treatment consists of coagulation, sedimentation, filtration and chlorination. The supply serves an average of 0.3 MGD to a population of 2,068. The water supply serving the Town of Graham is obtained from an impoundment on Back Creek. The water receives conventional treatment and serves a population of 8,000. The Chester H. Ross Men's Hosiery and Knitting Mill operates a water plant for domestic use only. The plant serves 240 employees and 36 homes in the Town of Alamance, using an average of 0.030 MGD. The treatment consists of filtration following the addition of alum, soda-ash, caustic soda ammonia, and chlorine. The intake is located on Alamance Creek just below Little Creek which receives the effluent from one of Gibsonville's sewage treatment plants.

The streams in this segment are used for bathing at three locations. Guilford College uses a small tributary to Horsepen Creek for public bathing. Cone Mills Corporation operates a Y.M.C.A. camp north of Greensboro and uses a small tributary of Reedy Fork for public bathing. Kimesville Lake, which is on a small tributary of South Prong of Stinking Quarter Creek, is also used for public bathing. Each of these bathing streams appears to be free from significant sources of pollution.

There are 27 significant sources of sewage and industrial waste pollution tributary to the waters in this segment of the Haw River Drainage Area. The total estimated pollution load from these sources before treatment, as expressed in population equivalent (P.E.), based on B.O.D., is 425,000, of which 290,000 is due to industrial waste. A breakdown of the sewage and industrial waste loadings shows that only 32% of the sewage and 27% of the industrial waste are removed from the streams by treatment. It is apparent that if the degraded waters of this segment are to serve needed beneficial uses, additional treatment will be required in many instances. The various sewage and waste discharges are described below:

Glen Raven Mills, Altamahaw, discharges untreated domestic sewage and industrial waste directly into Haw River. The estimated P.E. of the domestic sewage is 125 and the industrial waste P.E. is 910, making a total P.E. of 1,035. During periods of low stream flow, these untreated wastes result in excessive B.O.D. and coliform bacteria and seriously reduce the dissolved oxygen in the river.

The Town of Kernersville discharges waste from an Imhoff tank and sand filter into the headwaters of Reedy Fork. The plant loading has a P.E. of 650 while the P.E. to the stream is 260. The remainder of the sewage and

all industrial waste are treated at facilities in the Yadkin River Basin. The plant on the Cape Fear side of town discharges into a stream which at times contains only the effluent from the sewage plant. The stream has a gray color and a stale sewage odor. Approximately a mile from the plant, the stream is only 68% saturated with oxygen and is still carrying a heavy concentration of coliform bacteria. This plant appears to be heavily overloaded and should be either replaced, enlarged and more efficiently operated, or combined with another plant where the effluent will have more dilution. This stream should be well protected because it is on Greensboro's watershed and the plant effluent is discharged but a short distance above an important fish hatchery.

Greensboro-High Point Airport discharges the effluent from a secondary type treatment plant into Brush Creek. The effluent has an estimated P.E. of 10. Brush Creek is on the Greensboro watershed but appears to have no effect on the water quality. If properly operated, the plant should be adequate for present needs.

Guilford College discharges the effluent from a trickling filter plant into an unnamed tributary to Horsepen Creek which is also on the Greensboro watershed. The wastes tributary to the plant have a P.E. of 438 while the plant effluent has a P.E. of 66. The treated sewage has little effect on the stream from the standpoint of B.O.D. but does increase the coliform bacteria. Should coliform bacteria become a problem in the receiving stream the addition of an effective bactericidal agent to the plant effluent will be necessary.

Greensboro Area. The sewage and waste discharges from the City of Greensboro, the Cone Mills Corporation textile plants, and three fertilizer plants owned and operated by The American Agricultural Chemical Company, Swift & Company and Armour & Company combine to create one of the major sewage and industrial waste pollution problems in the entire Haw River Drainage Area. The waste discharges from each of these sources are tributary to either North or South Buffalo Creeks and are sufficiently close together to result in a joint effect upon the receiving streams (Buffalo Creek, Reedy Fork and Haw River), below the City of Greensboro. A brief description of each source of pollution is as follows:

City of Greensboro. The total population served by the municipal sewerage system is approximately 88,000; however, the industrial waste tributary to the system has a P.E. of 147,000, resulting in a total pollution load tributary to the two city-owned treatment plants equal in strength to the untreated domestic sewage from a population of 235,000. Approximately 30% of these wastes, expressed in terms of population equivalent (P.E.), are tributary to the South Buffalo Creek Plant while the remaining 70% are discharged to the North Buffalo Creek Plant. Both plants were designed to provide a degree of treatment commonly referred to as complete treatment; however, due to their overloaded condition as well as the effects of industrial wastes upon plant operations, neither is presently providing the degree of treatment necessary for the protection of the receiving streams.

Cone Mills Corporation in 1954 produced an estimated 4.36 m.g.d. of industrial waste with a P.E. of 122,000. Forty-one percent of the flow, or 1.78 m.g.d., was discharged to the City of Greensboro's North Buffalo Creek sewage and industrial waste treatment plant while the remainder was discharged without treatment into North Buffalo Creek some distance upstream

from the point of treatment plant effluent discharge. In terms of the organic pollution load, 39% or a P.E. of 48,000 was discharged to the treatment plant while the remainder having a P.E. of 74,000 was discharged untreated into the creek. In 1955, arrangements were effected between the City and Cone Mills Corporation whereby all of the industrial waste was discharged to the treatment plant in order to permit pilot plant studies on the combined sewage and industrial waste naturally tributary to this plant. This situation presently exists and additional studies are being made upon the combined sewage and waste.

The American Agricultural and Chemical Company manufactures superphosphate fertilizers from pebble phosphate and sulphuric acid with silico-fluoride and sodium fluoride as recovered by-products from the scrubbing tower waste. Sulphuric acid is prepared by the Chamber Process with cooling water as waste. The combined wastes are discharged through a ditch entering South Buffalo Creek above Sampling Station 20 and above the point of effluent discharge from the City of Greensboro's South Buffalo Creek sewage and industrial waste treatment plant. In 1956 studies showed that these combined wastes had a volume of 12,000 gallons during the one shift and were largely inorganic in character. The composite sample had a pH of 1.0 and contained 350 ppm phosphates, 770 ppm sulfates and 24 ppm fluorides. The final, combined wastes were untreated.

Armour & Company also manufactures superphosphate fertilizers from pebble phosphate and sulphuric acid prepared by the Chamber Process. The wastes consist of scrubbing tower water and cooling water from the sulfuric acid plant and are discharged to the ditch which receives the wastes from The American Agricultural and Chemical Company and flows into South Buffalo Creek at the point noted above. In 1956 composite samples were collected of the combined wastes while mixing the fertilizer and during the "dragout". The untreated wastes had a volume of 141,000 gallons during the one shift and were largely inorganic in character. The respective samples had pH's of 2.1 and 2.4 and contained 5 and 4 ppm phosphates, 140 and 90 ppm sulfates, and 28 and 22 ppm fluorides.

Swift & Company, Plant Food Division, operates a superphosphate plant only. In this case commercial sulphuric acid and ammonia are mixed with pebble phosphate and the waste is water from the scrubbing tower. In 1956 studies showed that the waste had a volume of 26,000 gallons during the one shift and was largely inorganic in character. The composite sample had a pH of 2.5 and contained 1,250 ppm phosphates, 1,200 ppm sulfates and 96 ppm fluorides. This untreated waste is discharged through a ditch to Mile Run Creek which enters South Buffalo Creek above Sampling Station 20 and above the point of effluent discharge from the municipal sewage and industrial waste treatment plant.

Although the above wastes are largely inorganic in character, they nevertheless constitute a potential hazard to downstream uses, such as public water supplies and livestock watering. The fluoride content of these wastes, together with that of the effluents from the municipal sewage treatment plants, is particularly hazardous to the above uses. The 1956 studies do not show the whole picture as samples of stream water collected in 1955 showed that the water at Sampling Station 20, 1.7 miles below the sources of the fluoride waste, contained 200 ppm fluorides on one occasion and at Sampling Station 24, 20.6 miles below these sources, the stream water still contained 12.8 ppm fluorides.

The combined waste discharges from these sources in 1954 amounted to some 15 m.g.d. and had a biochemical oxygen demand (5 day 20°C B.O.D.) of 51,500 pounds or a pollution load equivalent to the raw domestic sewage from a population of 309,000. After treatment of those portions of the sewage and wastes (12.2 m.g.d.) tributary to the two sewage treatment plants serving the City of Greensboro, these plant effluents had an estimated combined P.E. of 196,000.

The concentrations of organic pollutants discharged to South Buffalo Creek resulted in an average B.O.D. of 35 ppm at Sampling Station 21 with complete exhaustion of the dissolved oxygen while the pH of the samples ranged from 3.7 to 7.4. The pollution discharges to North Buffalo Creek from textile plants of Cone Mills Corporation, together with the effluent from the City's North Buffalo Creek sewage and industrial waste treatment plant resulted in an average B.O.D. of 300 ppm at Sampling Station 15, zero oxygen and a pH ranging from 6.6 to 11.3. North and South Buffalo Creeks join at a point approximately 8 to 9 miles below Stations Nos. 15 and 21 to form Buffalo Creek and the pollution from these two creeks resulted in an average B.O.D. of 88 ppm and zero oxygen at Sampling Station 24 located 15 miles below the points of waste discharge. This condition prevailed down to Reedy Fork where stream conditions slightly improved due to dilution and natural purification; however, the B.O.D. remained sufficiently high to result in the complete exhaustion of D.O. at times throughout Reedy Fork and in Haw River for some distance below the mouth of Reedy Fork. Substantial recovery, however, takes place in Haw River as indicated by the fact that the D.O. in the stream averaged 4.5 ppm at Station 33 and 5.5 ppm at Station 34 located just above the point where Burlington's Haw River Outfall Sewer discharges.

Coliform bacteria were found in the water in large numbers at all points sampled below the wastes discharges to and including Haw River as far down as Station 34 and the overall pollution is such as to preclude the use of the water for many beneficial purposes until adequate treatment is provided for each source of pollution. In this connection, the City of Greensboro has secured the approval of plans by both the State Board of Health and the State Stream Sanitation Committee for major improvements at the South Buffalo Creek sewage and industrial waste treatment plant and, in fact, has the construction well underway. In addition, Consulting Engineers have been employed, initial pilot plant studies have been completed and plans are under preparation for treating all sewage and industrial waste naturally tributary to the North Buffalo Creek Treatment Plant. Although the plans are being prepared as rapidly as possible, they may be subject to possible modification, depending upon the completion of final pilot plant studies employing new approaches to complete treatment. As noted previously, all industrial wastes from Cone Mills Corporation have been diverted to the municipal treatment plant to facilitate these studies.

Burlington Mills, Ossipee, discharges untreated domestic sewage and a small quantity of slasher waste into Reedy Fork near its mouth. The domestic sewage has a P.E. of 88 and the slasher waste has a P.E. of 18, making a total P.E. of 106. The stream at this point has not recovered from the effects of the wastes from the Greensboro Area; therefore, this waste adds to the overall pollution problem in Reedy Fork and Haw River. Treatment of these wastes should be effected at the same time treatment is provided at upstream sources of pollution.

Frissell Fabrics, Ossipee, discharges primary treated domestic sewage into Reedy Fork near its mouth. This effluent has a P.E. of 68 and could be eliminated by the installation of an institutional type sewage treatment plant employing a septic tank with suitable secondary treatment unit. The provision of such facilities should keep pace with upstream improvements.

The Town of Gibsonville has two sewage treatment plants. The North Plant discharges effluent into Travis Creek, a tributary of Haw River, while the South Plant discharges effluent into Cedar Creek, also known as Michael Branch, a tributary of Alamance Creek, at a point above the water supply of Chester H. Ross Men's Hosiery and Knitting Mill which supplies water to the Town of Alamance. Studies in 1955 showed that the organic loading to the North Plant, which receives industrial waste from the Liberty Hosiery Mill, Inc., had a P.E. of 2,778 while the effluent had a P.E. of 2,536. In 1954 this pollution at times depleted the dissolved oxygen in the stream below the plant, added large numbers of coliform bacteria and otherwise interfered with beneficial uses. While the stream had recovered to a considerable extent prior to entering Haw River, the Gibsonville waste nevertheless had a deleterious effect upon the river and retarded recovery from adverse effects of upstream pollution. Complaints have been received relative to this waste over a period of many years. Further studies in 1955 showed that the organic loading to the South Plant, which at that time was receiving industrial waste from the Minneola Mills of Cone Mills Corporation, had a P.E. of 1,470, while the effluent had a P.E. of 1,350. In 1954 this pollution was such as to deplete the dissolved oxygen in the stream below the plant, add large numbers of coliform bacteria (a constant threat to the aforementioned water supply) and otherwise interfere with beneficial uses. Here again, complaints were received over a period of years relative to pollution. In 1956 the Cone Mills Corporation dye waste was removed from the South Plant, thus materially reducing the pollution load to both the plant and the receiving stream. Nevertheless, the Town officials were not satisfied with the overall conditions at both plants. Consulting Engineers were employed, plans were approved by both the State Board of Health and the State Stream Sanitation Committee and secondary treatment was installed to protect the many downstream uses, including the public water supply taken from Alamance Creek. The Town of Gibsonville is to be highly commended for these important steps and is to be congratulated for being the first in this State to complete sewage treatment plant improvements, using a Federal Grant under the provisions of P.L. 660.

Copland Fabrics, Inc., Copland Converting and Finishing Company, Inc., and Copland-Fowler Industries, Inc., Hopedale, are all under one ownership and management. Untreated sewage from Copland Fabrics, Inc., is discharged to Stoney Creek while untreated sewage from the other two plants and the main office is discharged to Haw River. Untreated dye and finishing wastes are discharged into both Stoney Creek and Haw River from Copland Converting and Finishing Company, Inc. The total organic pollution load has a P.E. of 443. The sewage and waste enter Stoney Creek and Haw River at points so close together as to constitute a single source of pollution. Since this pollution enters Haw River in the recovery zone of upstream pollution, it retards this action and adds to the overall Haw River pollution problem. Steps should be taken toward providing needed sewage and waste treatment facilities as soon as possible.

The City of Burlington has two sewage collection systems, one discharging untreated sewage and industrial waste through the Haw River Outfall directly to the river at a point northeast of the City and the other discharging sewage and smaller amounts of industrial waste to a secondary type treatment

plant on Little Alamance Creek south of the Town of Graham. The sewage and industrial waste discharged directly to Haw River has a pollution load or P.E. equal to that of the domestic sewage from a population of 51,000. As mentioned previously, Haw River above the Burlington Haw River Outfall has recovered considerably from the adverse effects of upstream pollution from the Greensboro Area and other points of pollution. The untreated wastes from the City of Burlington materially retard this action and impose a large burden upon the river. The river below the point of discharge of these new wastes has an objectionable gray color and at times an offensive odor. The dissolved oxygen is lowered to nearly zero on occasion and the average amount is but 2.7 ppm. The untreated sewage results in very large numbers of coliform bacteria in the river, the average being 88,000,000 per 100 ml.

The organic loading to the existing sewage treatment plant on Little Alamance Creek has a P.E. of 22,200, while the effluent has a P.E. of 4,290, representing a reduction of 81%, which is lower than usually expected from this type of plant. In fact, some of the plant units are by-passed when the volume reaches the design flow of 2.0 m.g.d. The full effects of the plant effluent are not felt until the treated wastes reach Alamance Creek via Little Alamance Creek, due to the heavy chlorination of the plant effluent. The dissolved oxygen in Alamance Creek, about 2 miles below the point at which the plant effluent is discharged averages but 3.0 ppm and has been reduced on occasion to nearly zero. The water at times has an objectionable odor and fish kills have been reported in the vicinity of N. C. Highway 87 bridge. The Burlington pollution in Alamance Creek has an adverse effect upon the water in Haw River as this stream enters the degraded zone in and below the Burlington-Haw River-Graham-Swepsonville Area.

The City of Brulington has not been unmindful of its responsibility in these matters. Consulting Engineers have been engaged, sewage and waste studies have been conducted, a treatment plant site has been approved and secured, and final plans are about completed for treating the sewage and industrial wastes presently being discharged directly to Haw River as the first step in an overall pollution abatement plan for the City. Necessary improvements at the present sewage treatment plant have not been overlooked. While preliminary plans only have thus far been considered, the engineers have outlined a far-reaching plan for keeping abreast of the needs at this plant. It is fitting that the first emphasis should be placed upon the Haw River problem; however, it is strongly urged that both projects be completed as expeditiously as possible.

Cone Mills Corporation, Granite Plant and Tabardrey Plant, Haw River.

The untreated sewage and industrial wastes from the Granite Plant are discharged through several outfalls directly to Haw River immediately above U. S. Highway 70A bridge and for purposes of this report constitute a single source of pollution. The industrial wastes are from dyeing, bleaching and desizing operations. The untreated sewage and industrial wastes (largely slasher waste) from the Tabardrey Plant are discharged through a single outfall directly to Haw River at a point on the east bank about 900 feet south of the Southern Railway bridge. The organic loading to the river from both plants, as estimated in 1954, has a P.E. of 13,392, of which a P.E. of 180 comes from the Tabardrey Plant.

Haw River Sanitary District discharges untreated sewage and industrial waste directly to Haw River through an outfall located on the west bank 800 feet south of the Southern Railway bridge and a second outfall on the east bank 950 feet south of this bridge just below the Tabardrey Plant outfall.

The organic loading from the District, including a P.E. of 116 due to the A. A. Tew Abattoir, has a P.E. of 1,316 as estimated in 1954.

The pollution from all sources of waste within the District enters Haw River in the degraded zone below the City of Burlington and thus adds to the already overburdened river. It is not practicable, due to the nearness of the several sources of pollution, to assay the effects of each source; however, the condition of the water at Sampling Station 36 some 1.8 miles below the District shows the seriousness of the pollution problem. In 1954 the dissolved oxygen in the river was reduced to zero on occasion and averaged but 1.6 ppm. The biochemical oxygen demand (B.O.D.) averaged 15 ppm while the coliform bacteria averaged 18,000,000 per 100 ml. and was as high as 93,000,000 per 100 ml. The river at this point was grayish-brown in color and had a very objectionable odor. On occasion, the river had different colors immediately below the dyeing operations, depending upon the dye being used in the dye plant. The river at Sampling Station 37, some 1.3 miles below this sampling station, shows considerable deterioration. This is attributable to a breakdown of organic compounds and particularly starch waste which provides a ready food for bacteria. It must be borne in mind that these objectionable conditions are in part due to the wastes from the City of Burlington.

The Haw River Sanitary District and Cone Mills Corporation have not been unmindful of their respective responsibilities. The District engaged Consulting Engineers who, with the cooperation of Cone Mills Corporation, conducted sewage and waste studies as a basis for a preliminary report. This report recommended a single treatment plant for all of the sewage and wastes. It is urged that every effort be made to construct such a plant at the earliest possible date.

Town of Mebane - The sewerage system serves a population of 2,000 and receives industrial waste with a P.E. of 1,523, making a total P.E. of 3,523 as discharged to the overloaded primary treatment plant. The effluent with a P.E. of 2,297, creates foul conditions in Moadams Creek, the receiving stream, which on occasion is without flow except for the waste therein. The stream water below the treatment plant is devoid of dissolved oxygen, has an average B.O.D. of 150 ppm and an average of 50,000,000 coliform bacteria per 100 ml. The stream banks are covered with sludge. The conditions at Sampling Station 41, 1.4 miles below the treatment plant, are somewhat improved but nevertheless continue to be unsatisfactory. While this problem is largely local in character, the water in Back Creek at Sampling Station 42, 4.5 miles below Moadams Creek and 0.3 of a mile above Haw River, has not fully recovered from the Mebane pollution. In order to alleviate the foul and offensive conditions, secondary treatment should be added as rapidly as possible.

Town of Graham - The sewerage system serves a population of 6,000 and receives industrial waste with a P.E. of 5,749, making a total P.E. of 11,719. The untreated wastes are discharged directly to Haw River into the degraded zone below upstream pollution and into the backwaters of the impoundment caused by the dam at Swepsonville at a point a short distance below N. C. Highway 54 bridge and opposite the mouth of Back Creek. The river below the outfall contains sludge deposits and septic odor, while the industrial waste in the discharge, largely from textile dyeing and finishing, colors the water with various hues. In 1954 the hydroelectric power station below the dam was used but intermittently due to the dry season. This caused but a slow movement of water through the two mile long impoundment. While some improvement

was noted in river conditions just above the waste discharges from Virginia Mills, Inc., below the dam at Swepsonville, the dissolved oxygen in the river water was reduced to nearly zero on occasion. The average B.O.D. was 8.9 ppm while coliform bacteria were as high as 9,300,000 per 100 ml. In order that the Town of Graham may reduce its share of the overall pollution, a plant providing complete treatment should be constructed as rapidly as possible.

Virginia Mills, Inc., Swepsonville, discharges untreated sewage and industrial waste with a P.E. of 944 into the backwaters of a second impoundment or power pool on Haw River controlled by this Company. Due to the intermittent operation of the upper and lower hydroelectric power stations under 1954 conditions, the wastes tended to move slowly through the lower impoundment, thus causing an accumulation of slow moving waste. While the coliform bacteria tended to decrease in numbers under these conditions, there was an average resultant load of 170,000 per 100 ml. These wastes, while relatively small as compared to upstream pollution, nevertheless added to the already complex problem. In fact, the additional load on occasion reduced the dissolved oxygen to zero in the water a short distance below the upper dam and increased the B.O.D. from an average of 8.9 ppm to 11 ppm. The overall pollution in Haw River, including that discharged with the water of Alamance Creek, showed that the degraded zone of Haw River continued to the lower dam. Virginia Mills, Inc., should install remedial pollution abatement measures in keeping with upstream progress.

Chester H. Ross Men's Hosiery and Knitting Mill, Alamance, discharges untreated sewage with a P.E. of 62 directly to Alamance Creek. The main effect of this sewage discharge is to increase the coliform bacteria in Alamance Creek. The equivalent of secondary treatment should be provided for this sewage in keeping with upstream progress and practice.

The Town of Elon College and Elon College have a joint sewerage system and a new sewage treatment plant, completed in July 1954, which provides complete treatment for all sewage tributary to the system. The sewerage system and treatment plant are maintained and operated by the Town. The organic pollution load to the treatment plant has a P.E. of 1,765, which includes the peak college enrollment and a small amount of industrial waste from a pharmaceutical supply house, while the effluent has a P.E. of 265. The plant effluent is discharged into Gun Creek which was sampled in 1954 during the period immediately following the completion of the plant and at a time when the stream was either nearly dry or completely dry except for intermittent pools of water. The analyses, therefore, while deemed to be satisfactory, do not represent the best of operating conditions. The Town and college are to be congratulated for taking this important step and with proper operation the treatment plant should serve satisfactorily for some years to come.

Seller's Manufacturing Company, Saxapahaw, discharges untreated textile waste and sewage from the mill and village either directly to Haw River or via the short tailrace from the hydroelectric power station located at the dam a short distance upstream from the mill. There are three outfalls from the mill and two from the village which are listed as a single source of pollution for this report. The organic pollution from all sources has a P.E. of 2,665, 153 of which is due to sewage. Mercerizing results in a caustic waste being discharged to the river giving it a soapy appearance and a chemical odor. The pH of the river water in 1954 was increased by the caustic waste from a low of 7.2 above the mill to a high of 9.4 below the mill.

Incidental Pollution in Saxapahaw Area - Seller's Manufacturing Company is not responsible for all pollution from this area. Two outfalls are located across the river from the mill, below the Company dam and highway bridge, which discharge untreated sewage onto rocks in Haw River adjacent to the west bank. A county school, population 285, a Baptist Church and Parsonage, and one apartment with four units are connected to one outfall while three houses and a Methodist Church are connected to the second outfall. Under the dry weather conditions prevailing in 1954, no water for dilution of this sewage spilled over the dam except on occasion of heavy rainfall. Consequently, sludge deposits accumulated between heavy rains and offensive odors prevailed. While recognizing that the Seller's Manufacturing Company is not responsible for this pollution, it is included in the overall picture for this Area.

Analysis of the 1954 Haw River analytical data indicates that Saxapahaw is in the zone of recovery from upstream pollution. This is to say that on each day of sampling the dissolved oxygen in the river water at Sampling Station 56 was in excess of 1.0 ppm for the first time below Sampling Station 34, just above the initial pollution from the City of Burlington and, in fact, the minimum just above the Saxapahaw pollution was 1.9 ppm. While this was so, conditions at this point were and are far from satisfactory. On the day the dissolved oxygen dropped to 1.9 ppm numerous dead fish were found at this sampling station and on previous occasions fish kills were reported in the impoundment above the Seller's Manufacturing Company dam. The combined wastes from the Saxapahaw Area result in deterioration of the river and the general effect is to retard its recovery from upstream pollution. As noted previously, the industrial waste causes a marked rise in pH. The sewage increases the coliform bacteria from an average of 10,000 per 100 ml. above the pollution to 35,000 per 100 ml. at Sampling Station 57 below the pollution and offers a constant threat to the public water supply taken from the river at Bynum. The B.O.D. of the river water was increased from 8.4 ppm to 9.7 ppm. While the average dissolved oxygen in the river water was increased from 5.0 ppm to 8.1 ppm, this does not tell the whole story. When the dissolved oxygen was 1.9 ppm at the upstream sampling, the Saxapahaw pollution reduced the dissolved oxygen at the downstream sampling station to but 1.0 ppm which resulted in a fish kill. It is understood that the Seller's Manufacturing Company has been giving consideration to treating not only its own waste but all of the wastes in the Saxapahaw Area in a common treatment plant. The Company is to be highly commended for this type of public service thinking and it is urged that such a combined treatment plant be constructed at the earliest date practicable in order that necessary river improvements may be effected, including protection for the public water supply at Bynum.

Summary Discussion of Pollution in Segment III

It is obvious from the above presentation that Haw River and certain of its tributaries in this segment are being seriously polluted by untreated or partially treated sewage and industrial wastes from many sources. As noted previously, Haw River at a point just above the City of Burlington Haw River Outfall shows considerable recovery from upstream pollution from the Greensboro Area and other points, due to natural purification processes, only to be burdened by additional loads from the adjacent municipalities and industries and the wastes carried in certain of its tributaries. A study of the 1954 analytical data shows that the Saxapahaw Area is in a secondary zone of recovery below upstream pollution to this point and that river deterioration occurs immediately below this Area. From Sampling Station 58, 5.6 miles

below Saxapahaw, the river continued to show recovery from organic pollution to the end of this segment and the water was acceptable for many beneficial uses. It is apparent that only concerted action by all responsible for pollution will permit the best usage of the river itself and its polluted tributaries. Those who have completed projects are to be highly commended, those who have initiated action should complete their projects as rapidly as possible and those who have taken no action should do so immediately.

SEGMENT IV. HAW RIVER AND ITS TRIBUTARIES FROM MOUTH OF DRY CREEK
NEAR BYNUM TO WATER SUPPLY INTAKE
AT O'DELL MANUFACTURING COMPANY AT BYNUM

The river in this segment is primarily used to supply domestic water to the O'Dell Manufacturing Company and the Town of Bynum and to supply water to the hydroelectric power station operated by the Company. Water for these purposes flows through a canal to the hydroelectric power station at the mill where about 8,000 g.p.d. are taken from the canal above the trash rack and the local pollution for domestic consumption. After treatment the water is supplied to the mill employees and residents of the Town. There is no waste at the mill other than sewage with a P.E. of 38 which is discharged untreated into the tailrace and thence to the river. While this sewage is primarily a local nuisance, it does increase the concentration of coliform bacteria in the river below the mill. For both reasons, it should either be removed from the river and disposed of by subsurface methods or receive proper treatment prior to its discharge to the river.

SEGMENT V. HAW RIVER AND ITS TRIBUTARIES FROM WATER SUPPLY INTAKE
IN CANAL AT O'DELL MANUFACTURING COMPANY
AT BYNUM TO CONFLUENCE WITH DEEP RIVER

This last segment of Haw River has no significant sources of pollution directly on the main stem. Two of the tributaries, Robeson Creek and Morgan Creek, are used as sources of public water supply, Cedar Fork is used for bathing while Robeson Creek and New Hope River receive large quantities of sewage and industrial waste, both with and without treatment.

The Town of Pittsboro obtains its raw water supply from an impoundment on Robeson Creek which appears to be free from sources of significant pollution. After conventional treatment, the Town supplies a population of 1,200 with an average of 67,000 g.p.d. An emergency supply is obtained from an impoundment on Hill Creek, a tributary of Robeson Creek. The University of North Carolina, which also supplies water to the Town of Carrboro and the Town of Chapel Hill, obtains its raw water supply from University Lake. This lake is fed by the headwaters of Morgan Creek which appear to be free from sources of significant pollution. After conventional treatment, the University supplies a total population of 17,000 with 1.917 m.g.d. Gould Farms, located downstream from the pollution in Robeson Creek, sometimes take all or almost all of the creek water at the farm dam for irrigation of its flower crops. Certain portions of Morgan Creek, New Hope Creek and Bolin Creek are also used for irrigation and watering of livestock.

Eastwood Lake, which is located on Cedar Fork north of Chapel Hill, is used for bathing. New Hope Creek at Camp New Hope is also used for bathing.

The absence of direct pollution in the main stem below Bynum to its confluence with Deep River and recovery from upstream pollution permit a proper habitat for fish life and this portion of the river is used extensively for fishing. While the upper region of the New Hope River is highly developed, the lower region is very sparsely populated and relatively free from pollution. This condition, together with the recovery from upstream pollution, permits a proper habitat for fish life and fishing is extensively enjoyed in the lower portion of New Hope River.

It is most unfortunate that the sources of pollution on Robeson Creek and New Hope River are located at or near their respective headwaters where little dilution water is available as the usual rule. It is readily apparent that only the highest degree of treatment of the wastes and the best possible operation of the facilities provided will prevent nuisance conditions and permit the best utilization of the water for beneficial downstream requirements. There are 12 sources or points of significant pollution in this segment which are described as follows:

The Town of Pittsboro has a very poorly operated primary sewage treatment plant (septic tank) which is heavily overloaded with municipal sewage and industrial waste from the Pittsboro Poultry Company. The influent to the treatment plant has an estimated P.E. of 988 while the effluent has a P.E. of 692 as discharged to Robeson Creek. During dry seasons, most or all of the upstream flow is diverted for the municipal water supply; consequently, very little flow is available below the water supply dam for diluting the effluent from the sewage treatment plant. In 1954 the stream below the point of effluent discharge was gray in color and contained floating solids and an average coliform bacteria content of 19,000,000 per 100 ml., while the dissolved oxygen was as low as 0.5 ppm. The banks of the stream were covered with sludge and algae deposits. The absence of sludge drying beds and the location of the plant make maintenance very difficult. Secondary treatment is necessary to protect downstream uses; better yet, a new complete sewage treatment plant should be located at a location where proper maintenance and better dilution of effluent may be obtained, if practicable.

Webster Poultry Company, Pittsboro, discharges untreated waste with a P.E. of 1,500 from poultry dressing operations into Turkey Creek below a pasture. In 1954 the only flow in this creek was the untreated waste itself; consequently, foul conditions resulted. The biochemical oxygen demand (5 Day 20°C B.O.D.) in the stream below the waste discharge averaged 150 ppm, while the coliform bacteria averaged 45,000,000 per 100 ml. and the dissolved oxygen was usually zero. The water had a septic odor and a greenish gray color. Complete treatment by conventional means or its equivalent is necessary to protect downstream uses.

Relative to downstream uses, it should be noted that Robeson Creek in the vicinity of the Gould Farms irrigation intake, below both this pollution and the pollution from the Town of Pittsboro, was not at all times of a quality usually acceptable for irrigation purposes in 1954, with particular reference to the dissolved oxygen content which on occasion was near zero. However, the creek water as it entered Haw River was generally of satisfactory quality. If practicable, the Town of Pittsboro and the Webster Poultry Company should combine their respective wastes and treat it in a single treatment plant.

Virginia Carolina Chemical Corporation, Durham, manufactures superphosphate fertilizers from pebble phosphate and sulphuric acid which is prepared

at the plant. The wastes are largely inorganic in character and consist of tower scrubbing water and cooling water from the sulphuric acid plant. The wastes are discharged to a ditch which enters the headwaters of Third Fork Creek above the Durham sewage treatment plant on this creek. During dry periods, the flow in the headwaters is largely these wastes which become a mere trickle at Sampling Station 71. On March 26 and 27, 1956, composite samples were collected of both the combined wastes and the stream below the plant. The combined wastes had a pH as low as 0.9, phosphates as high as 150 ppm, sulfates as high as 270 ppm and fluorides as high as 9,600 ppm. The high fluorides were found during a wash-up period which occurred over a period of one hour. Stream samples, collected at a sampling station on Third Fork Creek about 1.5 miles below the plant, had a pH as low as 1.3, phosphates as high as 5.5 ppm, sulfates as high as 140 ppm and fluorides as high as 16 ppm. At Sampling Station 71, some distance below the latter sampling station, the water had a pH as low as 4.3, phosphates as high as 2.0 ppm, sulfates as high as 90 ppm and fluorides as high as 3.5 ppm. These conditions are such as to seriously interfere with beneficial downstream uses of Third Fork Creek. The wastes should either be treated separately or discharged to the City of Durham sewerage system with appropriate safeguards.

City of Durham has three sewage treatment plants of which the Northside Plant is located within the Neuse River Basin while the remaining two are in the Haw River Drainage Area.

The New Hope Plant, with additions completed in April 1954, under plans approved by the State Board of Health designed to protect beneficial downstream uses, provides complete treatment for both sewage and a small amount of industrial waste with a P.E. of 7,400. It is located on Sandy Creek but the effluent with a P.E. of 1,700 (1954 conditions) is discharged through a long outfall to New Hope Creek just below the mouth of Sandy Creek. In 1954, following the modernization of this plant but before it was placed in the best of operating condition, this office received complaints as to stream conditions below the plant effluent discharge. Samples of stream water were collected below the point of effluent discharge during this period which was so dry at times that the only flow in the stream, immediately below the outfall sewer, was treated sewage and industrial waste. As might be expected under these conditions, the dissolved oxygen in the stream at Sampling Station 69 a short distance below the outfall sewer, although present on each day of sampling, was low with a minimum of 1.0 ppm while coliform bacteria were present in considerable numbers. Little improvement was noted in the stream water at Sampling Station 70 about 3.0 miles below the outfall sewer, except for a marked decrease in coliform bacteria, due to the sluggish condition of the stream. This was due to an ill defined stream channel which caused the water to pool and tend to spread over flood plains. In view of these several conditions, the stream channel should be defined and the plant effluent chlorinated during critical conditions of high temperature and low flow. With these improvements and the best of operation, it is believed that this plant will perform satisfactorily for some time to come.

The Third Fork Creek Plant, which is a complete sewage treatment plant receiving both sewage and a considerable quantity of industrial waste, was found to be heavily overloaded during the 1954 stream studies. The influent to the plant had a P.E. of 32,400 while the effluent was reduced to a P.E. of but 7,400. The stream flow above the plant was a mere trickle on occasion; consequently, the stream flow was but partially treated sewage and industrial waste at such times. As a result, the dissolved oxygen in the stream below the plant effluent was reduced to zero during most of the period while the

biochemical oxygen demand (20°C 5 Day B.O.D.) averaged 28 ppm and the coliform bacteria 20,000,000 per 100 ml. Stream recovery was retarded for some miles downstream due to ill defined channel conditions as explained for New Hope Creek. In recognition of these adverse conditions, the City of Durham secured the approval of both the State Board of Health and State Stream Sanitation Committee for major additions and improvements, including chlorination, at the Third Fork Creek Plant designed to protect beneficial downstream uses. These additions and improvements are presently underway and when completed, they should permit this plant to be operated satisfactorily for some years to come. The City is also considering ways and means to improve channel conditions. The City of Durham is to be highly commended for the far-reaching steps already taken and in process to improve stream conditions below each of the two sewage treatment plants. It is urged that the remaining steps be taken as rapidly as possible.

Hope Valley Mutual Sewage Disposal Association, Inc., near Durham, discharges domestic sewage from a population of 260 to a primary treatment plant located on Third Fork Creek about 2.5 miles below the City of Durham Third Fork Creek Plant. The plant effluent with a P.E. of 200 (1954 conditions) is normally discharged through an outfall sewer connected to the creek. The general effect of this discharge is to cause further deterioration of an already highly polluted stream, the full effect taking place about 1.7 miles below the effluent discharge at Sampling Station 74 where there is pooling. In 1954 the overall pollution caused the stream water at this point to contain a smaller amount of dissolved oxygen, usually zero, than at Sampling Station 73 immediately below this plant. There was an increase in biochemical oxygen demand (20°C 5 Day B.O.D.) and an increase in coliform bacteria. About the year 1953 the outfall sewer to the creek broke and for a period of three years flooded swampy land adjacent to the creek. This gave rise to numerous complaints as to odors and mosquitoes until the broken outfall was replaced with a new line; however, this did not improve the overall adverse conditions in the creek. Secondary treatment units should either be added to the present plant in keeping with upstream progress and action, or the sewage should be discharged to the City of Durham sewerage system.

Swartz Tallow Company, near Durham, operates a rendering plant on the headwaters of Gum Creek almost exclusively on refuse from poultry processing plants. The wastes consist of condenser water and general washdown water. The condenser water is recirculated through a pond which overflows only during wet weather. The washdown water flows through a grease trap and a settling tank which provide but little treatment. Grease is recovered daily from these devices and solids on a weekly basis. The settling tank is operated on a fill and draw basis, the supernatant, so called, being pumped to Gum Branch once or twice daily. Composite samples, collected of the wastes on April 2 and 3, 1958, show that the combined wastes entering the stream have an estimated P.E. of 720. The stream for a short distance below the point of waste discharge contains visible evidence of pollution and has a slight odor. At Sampling Station 76, about a mile downstream, observations since 1954 indicate that there is considerable recovery from the upstream pollution. In 1954 there was no flow in the stream at this point and thus no water to sample. These wastes should be treated in keeping with requirements to preserve water quality which will be assigned when this stream is classified.

The Town of Carrboro in 1954 treated domestic sewage in a poorly operated, heavily overloaded primary treatment plant located on Morgan Creek below University Lake from which most of the natural flow was diverted for the public

water supply derived therefrom. The influent to the sewage treatment plant had a P.E. of 1,556 while the effluent had a P.E. of 1,018. Since only a very small amount of dilution water was available, the stream below the plant effluent was devoid of dissolved oxygen at times and contained exceptionally large numbers of coliform bacteria because of the very poor operation of the plant. The stream water was discolored by the partially treated sewage and had an objectionable septic odor. In recognition of those adverse conditions, the Town secured approval of plans for plant improvements, including chlorination of the effluent, from the State Board of Health which were designed to protect downstream uses of the creek water. The plan called for step installations which have progressed to the extent as to afford considerable protection to the stream. The Town is to be highly commended for this admirable action and it is urged that the remaining steps be taken as rapidly as possible.

The Town of Chapel Hill has a sewerage system which serves both the Town and the University of North Carolina and four laundries. This system is served by two complete sewage and industrial waste treatment plants, one of which is located on Morgan Creek below the Carrboro sewage treatment plant while the other is located on Bolin Creek.

The influent to the well operated Morgan Creek Plant has a P.E. of about 5,800 while the effluent has a P.E. of 580. Generally speaking the stream water, which receives the Carrboro effluent, is in good condition by the time it reaches the Chapel Hill Morgan Creek Plant. The main effect of the effluent discharge from the latter plant is to increase the coliform bacteria from an average of 33,000 per 100 ml. above the plant to an average of 12,000,000 per 100 ml. below the plant. In view of the location of this plant, which is adjacent to a much used golf course, and to further protect downstream uses, the plant effluent should be chlorinated.

The Bolin Creek Plant influent has a P.E. of 7,840, due to the greater quantities of laundry waste reaching it, while the effluent has a P.E. of 1,960. This is an old plant which is not operated as well as the newer Morgan Creek Plant. In 1954 Bolin Creek contained larger numbers of coliform bacteria above this plant than was to be expected. It is believed that this was caused by a broken sewer. The effluent from the Bolin Creek Plant lowered the dissolved oxygen in the stream water from an average of 7.6 ppm above the plant to an average of 6.5 ppm below the plant and increased the biochemical oxygen demand from 2.1 ppm to 4.1 ppm. While this was so, the dissolved oxygen was sufficient on each day of sampling to sustain fish life and the water was generally of acceptable quality. This old plant was designed to treat the sewage from a population of about 7,500. It is obvious that this plant has reached its designed capacity from the viewpoint of organic loading and it can be anticipated that Bolin Creek below the outfall will soon begin to show adverse conditions. An engineering study should be made with the view in mind of modernizing this plant to meet the existing load and to anticipate the growth of this part of the Town.

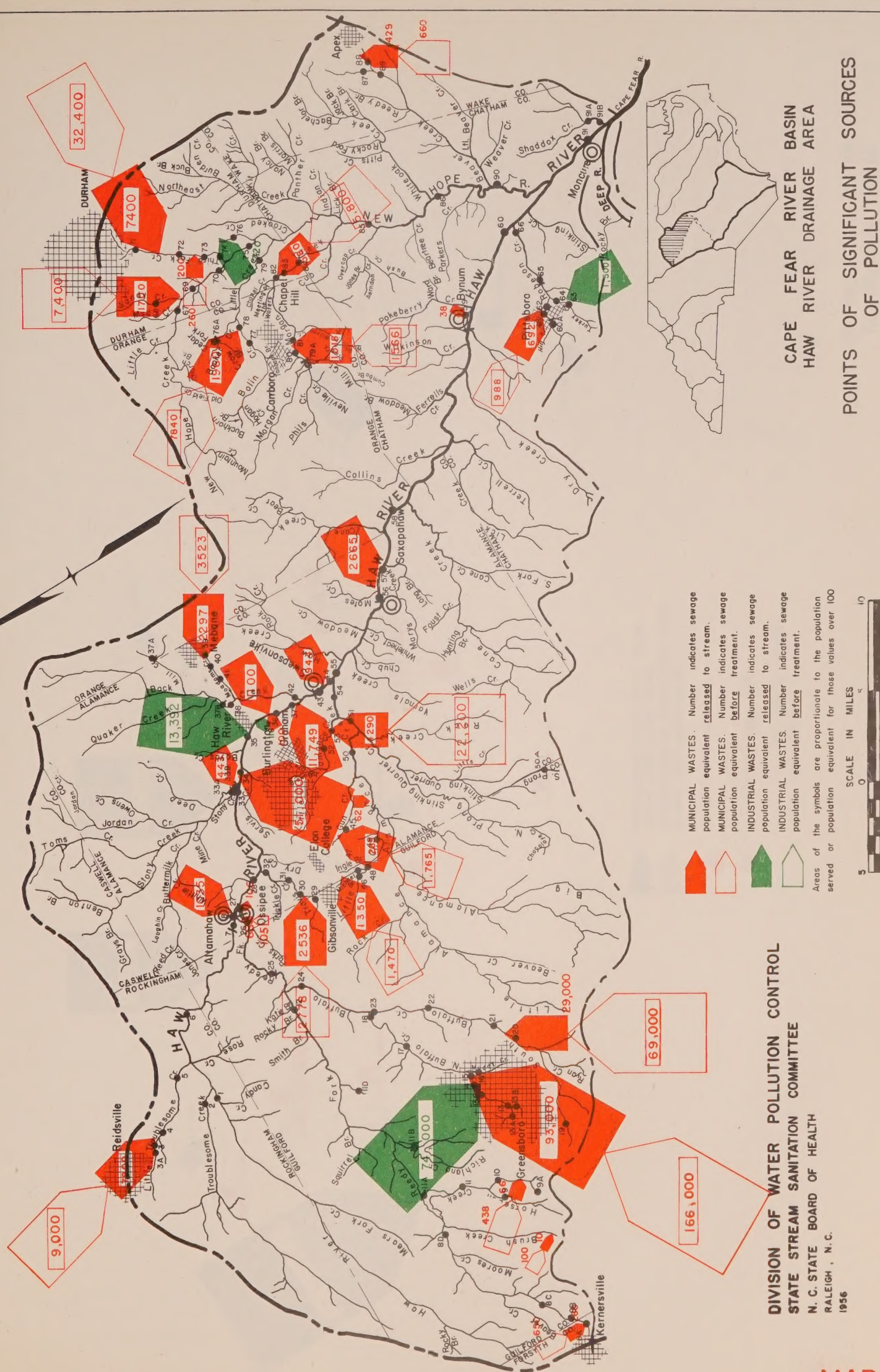
The Town of Apex has two primary sewage treatment plants, one of which discharges to Middle Creek in the Neuse River Basin while the other, an Imhoff tank, discharges to Beaver Creek, tributary to New Hope River. This plant is poorly operated and overloaded. It is serving a population of 662, although it was only designed for 500. The dissolved oxygen in Beaver Creek below this point of effluent discharge is zero at times and coliform bacteria are found in very large numbers. These objectionable conditions are intensified by the fact that the receiving stream has very little flow and at times

goes dry. Secondary treatment is required to protect the receiving stream, if the Town continues to discharge sewage at this point. The conditions at the sewage treatment plant on Middle Creek are similar to those at the plant just discussed. In view of this fact, the Town should have an engineering study made to determine the best course of action.

Carolina Power & Light Company, Cape Fear Steam Plant, Moncure, pumps domestic, condenser and boiler make-up water from the Cape Fear River just below the confluence of Haw and Deep River. The condenser water is discharged into a canal that flows parallel to the river for approximately six miles to a point just above Buckhorn Dam. This canal extension was made in early 1957 to avoid recirculation of hot water. The ashes are presently discharged in a water carriage system to a twelve-acre lagoon. It is estimated that this lagoon will be sufficient for the next ten years. During the 1954 stream studies, while construction was going on, these ashes were discharged by means of a ditch to Shaddox Creek where they settled in part in the creek bed which carries but little natural flow in dry seasons. The settled effluent from the lagoon is now discharged to Shaddox Creek but is clear.

Summary Discussion of Pollution in Segment V

Robeson Creek above the Goulds Farm irrigation intake is seriously polluted by both partially treated sewage and untreated industrial waste, although the creek water entering Haw River is of generally satisfactory quality. Relative to New Hope River, it has been noted that the upper region is highly developed and the main tributaries to this river show the impact of this development in a number of instances. In some instances remedial measures have been effected while in others improvements are underway. Although New Hope River had not fully recovered from the effects of upstream pollution prior to entering Haw River, according to the 1954 analytical data, the conditions were such in the lower portion as to support fish life. As noted previously under the Summary Discussion of pollution in Segment III, Haw River in 1954, below Sampling Station 58 to the end of this Segment, continued to show recovery from organic pollution. While this recovery was retarded somewhat by the flow from New Hope River, the 1954 conditions in the main stem from Bynum to its confluence with Deep River were such as to provide a proper habitat for fish life. While this was so, it has been reported that the upstream chemical pollution is of a degree in dry weather as to interfere with the proper operation of the boilers at the Carolina Power & Light Company Cape Fear Steam Plant on the Cape Fear River a short distance below Moncure. As for the other segments of the Haw River Drainage Area, only concerted action by all responsible for pollution will permit the fullest utilization of the river and its polluted tributaries. Those who have completed projects are to be highly commended, those who have initiated action should complete their projects as rapidly as possible, and those who have taken no action should do so immediately.



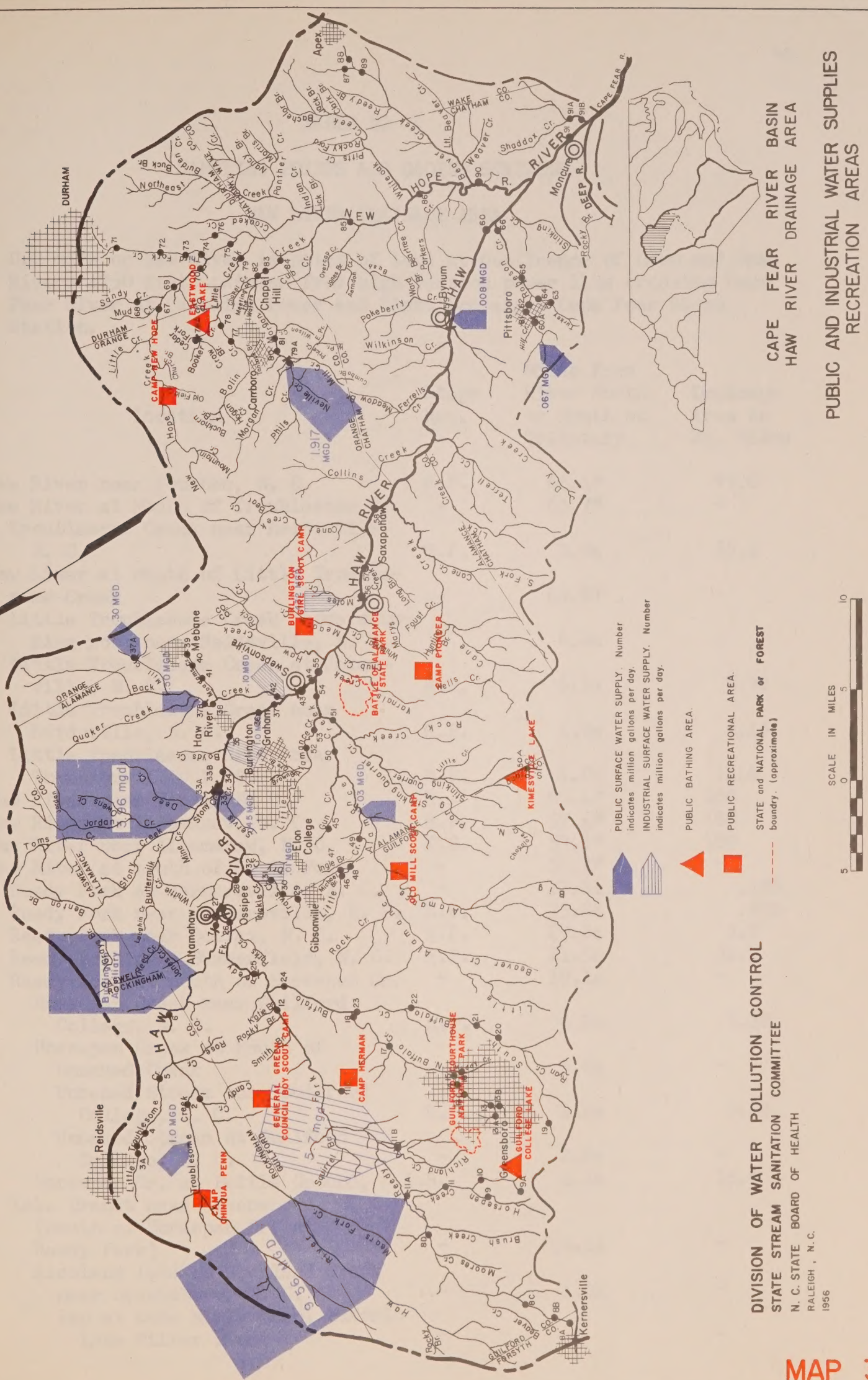


TABLE NO. 1

SAMPLING POINTS AND GAGING STATIONS

HAW RIVER DRAINAGE AREA

Note: 0.0 mile on Haw River is point of land at Confluence of Deep and Haw Rivers 1750 feet upstream from high tension power line crossing Cape Fear River at Carolina Power and Light Company's Cape Fear Steam Station.

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
1	Haw River near Foushee, N. C.	R.P.	66.4*	77.6
	Haw River at Mouth of Troublesome Cr.	-	65.7*	-
2	Troublesome Creek near Reidsville, N. C.	R.P.	1.0a	55.1
	Haw River at Mouth of Little Troublesome Creek	-	63.8*	-
3A	Little Troublesome Creek above swimming pool near Reidsville, N. C.	-	6.2a	-
3	Little Troublesome Creek at Reidsville, N. C.	R.P.	6.1a	3.72
4	Little Troublesome Creek near Reidsville, N. C.	R.P.	4.9a	5.45
5	Little Troublesome Creek near Thompsonville, N. C.	R.P.	1.0a	12.6
6	Haw River near Benja, N. C.	R.	60.4*	168
7	Haw River at Altamahaw, N. C.	R.P.	57.4*	188
8	Haw River near Altamahaw, N. C.	O.S.	57.1*	189
	Haw River at mouth of Reedy Fork	-	56.2*	-
8A	Reedy Fork at Kernersville, N. C.	-	33.8a	.186
8B	Reedy Fork near Kernersville, N. C.	R.P.	33.0a	.803
8C	Reedy Fork near Colfax, N. C.	R.P.	29.2a	5.8
8D	Reedy Fork near Summerfield, N. C.	R.P.	21.5a	34.2
	Reedy Fork at mouth of Horsepen Cr.	-	19.1a	-
9	Horsepen Creek near Guilford College, N. C.	R.P.	6.2a	9.10
	Horsepen Creek at Mouth of Unnamed Creek	-	3.8a	-
10	Unnamed Stream near Guilford College, N. C.	R.P.	1.8a	3.05
9A	Unnamed Stream at Guilford College, N. C.	-	2.8a	-
11	Horsepen Cr. at Battle Ground, N.C.R.	-	2.4a	15.9
11A	Lake Brandt near Greensboro, N. C. (Mouth of Horsepen Cr. at Reedy Fork)	-	19.1a	-
11B	Richland Lake on Richland Creek near Greensboro, N. C.	-	1.0a	-
11C	Tap at Cone Mills Corp. Buffalo Lake Filter Plant	-	-	-

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
	Reedy Fork at Mouth of Unnamed Tributary	-	13.3a	-
11D	Unnamed Tributary to Reedy Fork near Greensboro, N. C.	-	1.7a	-
	Reedy Fork at Mouth of Richland Creek	-	15.1a	-
12	Reedy Fork near Gibsonville, N. C.	R.	8.3a	133
	Reedy Fork at Mouth of Buffalo Cr.	-	7.3a	-
	Buffalo Creek at confluence of North & South Buffalo Creek	-	8.2a	-
19	South Buffalo Cr. near Pomona, N. C.	O.S.	19.8a	7.33
20	South Buffalo Creek at Willow Road at Greensboro, N. C.	R.P.	11.9a	29.6
21	South Buffalo Creek at Pear St. Ext. at Greensboro, N. C.	R.P.	9.8a	31.3
	South Buffalo Creek near Greensboro, N. C.	R.	8.7a	32.8
22	South Buffalo Creek near Bessemer, N. C.	R.P.	2.8a	39.1
23	South Buffalo Creek at Old Bridge site near McLeansville, N. C.	O.S.	0.1a	44.7
	Reedy Fork at mouth of Buffalo Cr.	-	8.2a	-
13A	North Buffalo Creek at Westover Terrace at Greensboro, N. C.	R.P.	13.8a	9.49
	North Buffalo Creek at Mouth of Unnamed Tributary	-	13.5a	-
13B	Unnamed Tributary to North Buffalo Creek at Fairmount St. at Greensboro, N. C.	R.P.	0.2a	1.06
13	North Buffalo Creek at Garland Drive at Greensboro, N. C.	R.P.	13.4a	10.9
13C	North Buffalo Creek at Church St. at Greensboro, N. C.	R.P.	11.1a	14.2
14	North Buffalo Creek at Summit Ave. at Greensboro, N. C.	R.P.	9.9a	21.7
15	North Buffalo Creek at Greensboro, N. C.	O.S.	7.9a	23.0
	North Buffalo Creek at Muddy Creek	-	7.7a	-
16	Muddy Cr. at Greensboro, N. C.	R.P.	0.2a	3.98
17	North Buffalo Creek near Greens- boro, N. C.	R.	4.9a	36.4
18	North Buffalo Creek near McLeansville, N. C.	R.P.	0.1a	43.7
	North Buffalo Creek at Confluence with South Buffalo Creek	-	8.2a	-
24	Buffalo Creek near Gibsonville, N. C.	O.S.	1.2a	99.7
25	Reedy Fork near Ossipee, N. C.	R.P.	5.6a	241
26	Reedy Fork near Altamahaw, N. C.	-	2.4a	252

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Mi.
27	Reedy Fork at Ossipee, N. C.	R.P.	0.9a	254
28	Haw River near Ossipee, N. C.	O.S.	55.0*	450
	Haw River Creek at Mouth of Travis Cr.	-	54.2*	-
29	Travis Creek at Gibsonville, N. C.	R.P.	3.9a	1.40
30	Travis Creek near Gibsonville, N.C.	R.P.	3.1a	1.82
31	Travis Cr. near Elon College, N. C.	R.P.	2.1a	4.70
32	Travis Cr. near Glen Raven, N. C.	R.P.	0.3a	16.1
33	Haw River at Hopedale, N. C.	R.P.	49.0*	478
	Haw River at Mouth of Stoney Creek	-	48.6*	-
	Stoney Creek near Burlington, N. C.	R.	4.5a	44.2
33A	Burlington Lake on Stoney Creek at Burlington Intake near Hopedale, N. C.	-	1.4a	-
33A-1	Burlington Lake at end of Discharge Line at Raw Water Storage Reservoir at Burlington, N. C.	-	-	-
33B	Stoney Creek at Hopedale, N. C.	-	0.3	-
34	Haw River near Hopedale, N. C.	O.S.	48.3*	582
35	Haw River near Haw River, N. C.	R.	46.0*	599
36	Haw River at New Highway near Graham, N. C.	R.P.	43.9*	607
37	Haw River near Graham, N. C.	R.P.	42.6*	608
	Haw River at Mouth of Back Creek	-	42.3*	-
	Back Creek at Mouth of Mill Creek	-	8.2a	-
37A	Mill Creek near Mebane, N. C.	-	2.5a	-
37B	Back Creek near Mebane, N. C.	-	5.8a	-
38	Back Creek near Haw River, N. C.	R.P.	4.9a	69.5
	Back Creek at Mouth of Moadams Cr.	-	4.8a	-
39	Moadams Creek above sewage effluent outfall at Mebane, N. C.	R.P.	2.9a	1.07
40	Moadams Creek below Sewage effluent outfall at Mebane, N. C.	R.P.	2.7a	1.22
41	Moadams Creek near Mebane, N. C.	R.P.	1.3a	3.38
	Back Creek near Graham, N. C.	R.P.	1.1a	78.5
42	Back Creek at N. C. Highway 54 near Graham, N. C.	R.P.	0.3a	83.0
43	Haw River at Swepsonville, N. C.	R.P.	40.6*	697
44	Haw River above Alamance Creek at Swepsonville, N. C.	-	40.3*	698
	Haw River at mouth of Alamance Creek	-	40.2*	-
	Alamance Creek at Mouth of Little Alamance Creek	-	15.6a	-
	Little Alamance Creek near Whitsett, N. C.	R.P.	4.8a	38.4
	Alamance Creek at Mouth of Little Creek	-	10.9a	-
46	Little Creek at U. S. Hwy. 70 near Gibsonville, N. C.	O.S.	4.7a	3.44
	Little Creek at Mouth of Cedar Cr.	-	4.5a	-
47	Cedar Creek at U. S. Hwy. 70 near Gibsonville, N. C.	O.S.	0.2a	1.74

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Mi.
48	Little Creek near Elon College, N. C.	R.P.	4.2a	5.18
49	Little Creek near Alamance, N. C.	R.P.	1.7a	10.7
	Alamance Creek at Alamance, N. C.	R.P.	9.7a	144
	Alamance Creek at Mouth of Gun Cr.	-	7.3a	-
45	Gun Creek near Elon College, N. C.	-	3.6a	3.68
	Gun Creek near Alamance, N. C.	R.P.	2.1a	5.02
50	Alamance Creek at Bellemont, N. C.	R.P.	6.0a	157
	Alamance Creek at Mouth of Stinking Quarter Creek	-	4.0a	-
	Stinking Quarter Creek at Mouth of South Prong Stinking Quarter Cr.	-	4.0a	-
	South Prong Stinking Quarter Cr. at Mouth of Unnamed Tributary	-	5.8a	-
50A	Unnamed Tributary to South Prong Stinking Quarter Creek near Kimesville, N. C.	-	0.5a	-
51	Alamance Creek near Bellemont, N. C.	R.P.	3.6a	247
	Alamance Creek at Mouth of Little Alamance Creek	-	2.0a	-
52	Little Alamance Creek near Graham, N. C.	R.P.	4.2a	13.2
53	Little Alamance Creek near Bellemont, N. C.	R.P.	2.7a	14.7
	Alamance Creek at N. C. Hwy. 87 near Bellemont, N. C.	-	1.9a	-
54	Alamance Creek at Swepsonville, N.C.	-	1.0a	267
55	Haw River near Swepsonville, N. C.	R.P.	39.6*	965
56	Haw River at Saxapahaw, N. C.	W.W.	34.2*	1020
57	Haw River near Saxapahaw, N. C.	R.P.	32.9*	1030
	Cane Creek near Carrboro, N. C.	R.P.	1.2a	35.8
	Haw River at Mouth of Cane Creek	-	30.3*	-
58	Haw River near Terrills, N. C.	R.P.	28.6*	1090
59	Haw River at Bynum, N. C.	O.S.	13.8*	1280
60	Haw River near Pittsboro, N. C.	R.	8.1*	1310
	Haw River at Mouth of Robeson Cr.	-	8.0*	-
60A	Robeson Creek at Pittsboro Water Supply near Pittsboro, N. C.	-	6.9a	-
61	Robeson Creek at Pittsboro, N. C.	R.P.	5.8a	8.93
62	Robeson Creek near Pittsboro, N. C.	R.P.	5.3a	9.19
	Robeson Creek at Mouth of Turkey Cr.	-	4.6a	-
63	Turkey Creek above Webster Poultry Plant at Pittsboro, N.C.	O.S.	0.9a	3.80
64	Turkey Creek below Webster Poultry plant at Pittsboro, N. C.	O.S.	0.7a	3.88
65	Robeson Creek at Gould Farms near Pittsboro, N. C.	O.S.	4.1a	18.6
66	Robeson Creek near Seaforth, N. C.	R.P.	0.4a	27.2
	Haw River at Mouth of New Hope River	-	4.8*	-
67	New Hope River at U. S. Hwy. 15 & 501 near Durham, N. C.	O.S.	30.7a	36.4

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Mi.
	New Hope River at Mouth of Sandy Cr.	-	30.2a	-
68	Sandy Creek near Durham, N. C.	R.P.	1.2a	6.21
69	New Hope River at Jefferson Davis Road near Durham, N. C.	R.P.	29.1a	52.2
70	New Hope River near Durham, N. C.	R.P.	26.4a	57.0
	New Hope River at Mouth of Third Fork Creek	-	24.7a	-
71	Third Fork Creek at Cornwallis Road at Durham, N. C.	R.P.	5.7a	7.51
72	Third Fork Creek near Keene, N.C.	R.P.	3.3a	11.1
73	Third Fork Creek near Lowes Grove, N. C.	R.P.	1.6a	16.1
74	Third Fork Creek near Bland, N.C.	R.P.	0.9a	16.6
75	New Hope River at Bland, N. C.	R.P.	23.0a	76.3
	New Hope River at Mouth of Un- named stream near Chapel Hill, N.C.	-	22.8a	-
76	Unnamed stream near Bland, N. C.	R.P.	1.0a	0.96
	New Hope River at Mouth of Little Creek	-	20.4a	-
	Little Creek at Confluence of Booker Creek and Bolin Creek	-	5.7a	-
77	Bolin Creek at Chapel Hill, N.C.	R.P.	1.0a	10.6
78	Bolin Creek near Chapel Hill, N. C.	O.S.	0.4a	11.6
78A	Booker Creek at Eastwood Lake near Chapel Hill, N. C.	-	1.6a	-
79	Little Creek near Bland, N. C.	R.P.	1.8a	23.7
79A	University Lake on Morgan Creek (Raw Water Tap at Filter Plant) near Chapel Hill, N. C.	-	16.2a	-
	New Hope River at Mouth of Morgan Cr.	-	14.6a	-
80	Morgan Creek above Sewage Effluent outfall at Carrboro, N. C.	R.P.	14.4a	31.7
81	Morgan Creek below Sewage Effluent outfall at Carrboro, N. C.	R.P.	12.6a	31.7
82	Morgan Creek above Sewage Effluent outfall No. 2 at Chapel Hill, N. C.	O.S.	9.8a	37.4
83	Morgan Creek $\frac{1}{4}$ mile below Sewage Effluent outfall No. 2 at Chapel Hill, N. C.	R.P.	9.2a	38.0
84	Morgan Creek near Farrington, N. C.	R.P.	4.2a	45.6
85	New Hope River at Farrington, N.C.	R.P.	13.0a	230
86	New Hope River near Pittsboro, N. C.	R.P.	7.8a	285
	New Hope River at Mouth of Beaver Creek	-	4.3a	-
87	Beaver Creek at Apex, N. C.	R.P.	10.8a	4.14
	Beaver Creek at Mouth of Un- named Stream	-	10.3a	-

Sta. No.	Location	Stage Ref.	Miles From River Mouth or Mouth of Tributary	Drainage Area in Sq. Mi.
	Unnamed Stream at Apex, N. C.	R.P.	0.8a	0.47
89	Beaver Creek near Apex, N. C.	R.P.	10.1a	6.53
90	New Hope River near Merry Oaks, N. C.	R.P.	4.1a	340
91	Haw River at Moncure, N. C.	R.P.	1.7*	1700
	Haw River at Mouth of Shaddox Creek	-	0.4*	-
	Shaddox Creek at U. S. Hwy. 1 near Moncure, N. C.	R.P.	2.4a	5.59
91A	Shaddox Creek near Moncure, N. C.	R.P.	0.45a	14.8
91B	Shaddox Creek at Mouth near Moncure, N. C.	-	0.0a	14.8

a Miles from mouth of tributary.

* Miles from mouth of Main River.

Stage Reference

- R. - Recording Gage
R.P. - Reference Point
O.S. - Outside Staff (Staff Gage)

TABLE 2

PUBLIC SURFACE WATER SUPPLIES
CAPE FEAR RIVER BASIN
HAW RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Avg. Used M.G.D.	Owner- ship	Source of Supply	Im- pound- ed	Date Install- ed	Design Capacity M.G.D.	Treatment
Alamance	450	250	0.030	P	Alamance Creek	Yes	-	0.045	Pre Cl_2 , Alum, Soda Ash, Caus- tic, NH_3
Burlington	24,560	30,000	3.960	M	Stoney Creek	Yes	1950	3.00	Pre Cl_2 , (Sometimes Prelime) Alum, (Sometimes $FeSO_4$) Sed., Rapid Sand Filt., Post Cl_2 , Post Lime for pH adj.
Bynum	400	400	0.008	P	Haw River	Yes	1950	0.03	Alum, Filtration, Cl_2
Carrboro	1,789	2,000	0.117	M	Chapel Hill	-	-	-	-
Chapel Hill	9,177	15,000	1.800	State	Morgan Creek (University Lake)	Yes	1950	3.00	Alum, Carbon, Pre Cl_2 , Sed., Filt., Post Cl_2 , Lime, pH adj.
Graham	5,026	8,000	0.500	M	Back Creek	Yes	1951	1.00	Pre Cl_2 , Alum, Filt., Fe removal, Lime, pH adj.
Greensboro	74,389	90,000	9.560	M	Reedy Fork, Bush Creek, Horsepen Cr.	Yes	1923	12.00	Pre Cl_2 , Alum, Sed., Rapid Sand Filt., Post Cl_2 , Carbon, Flourides
Mebane	2,068	2,170	0.300	M	Mill Creek and Springs	Yes	1922	0.50	Alum, Sed., Filt., Post Cl_2
Pittsboro	1,094	1,200	0.067	M	Robeson Creek	Yes	1950	0.25	Alum, Sed., Filt., Lime, Post Cl_2
Reidsville	11,709	12,600	1.000	M	Big Troublesome Creek	Yes	1952	3.00	Alum, Sed., Filt., Post Cl_2

TABLE 3
INDUSTRIAL SURFACE WATER SUPPLIES
CAPE FEAR RIVER BASIN
HAW RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Avg. Used M.G.D.	Owner- ship	Source of Supply	Im- pound- ed	Date In- stalled	Design Capa- city	Treatment
Greensboro - Cone Mills Corp.	-	-	5.700	P	Reedy Fork & tributaries	Yes	-	-	Coagulation, sedimentation, & filtration
Haw River - Cone Mills Corp.	-	-	1.000	P	Haw River	Yes	-	-	Alum, filtration, soften
Hopedale - Copland Converting & Finishing	-	-	0.045	P	Stoney Creek	Yes	-	-	Filtration, pH adj., Cl ₂ , soften
Ossipee - Frissell Fabrics	-	-	0.010	P	Surface drainage	Yes	-	-	None
Saxapahaw - Sellers Mfg. Co.	-	-	0.432	P	Motes Creek	Yes	-	-	Alum, filtration, soften
Sweepsonville - Virginia Mills	-	-	0.100	P	Haw River	Yes	-	-	Alum, filtration, soften

PUBLIC GROUND WATER SUPPLIES

CAPE FEAR RIVER BASIN

HAW RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Estimated Consumption M.G.D.	No. of Wells	Est. Total Yield M.G.D.	Date Installed	Type of Treatment
Elon College, Town & College	1,109	1,765	M	0.118	7	0.374	1925	None
Gibsonville	1,866	2,127	M	0.261	4	0.305	-	Calgon

TABLE 5

INDUSTRIAL GROUND WATER SUPPLIES

CAPE FEAR RIVER BASIN

HAW RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Estimated Consumption M.G.D.	No. of Wells	Est. Total Yield M.G.D.	Date Installed	Type of Treatment
Altamahaw - Glen Raven Knitting	-	-	P	0.035	1	-	-	Soften
Burlington - Western Electric Co., Inc.	-	-	P	0.050(1)	1	-	-	None
Carrboro - Pacific Mills	-	-	P	0.020	1	-	-	Soften
Durham - Swartz Tallow Co.	-	-	P	-	-	-	-	None
Gibsonville - Cone Mill Corp.	-	-	P	0.230(2)	-	0.300	-	Permutit soften
Liberty Hosiery Mill	-	-	P	0.020(3)	1	-	-	Soften
Mebane - White Furniture Co.	-	-	P	0.012	1	-	-	None
Ossipee - Burlington Mills	-	-	P	0.037	-	-	-	Soften

- (1) Part of water from City of Burlington.
 (2) Before removal of dye and finishing operations.
 (3) Part of water from Town of Gibsonville.

TABLE 6
POINTS OF SIGNIFICANT SOURCES OF POLLUTION
CAPE FEAR RIVER BASIN
HAW RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treat- ment	Design Capa- city M.G.D.	Est. P. E. Before Treatment	Est. P. E. After Treatment	Receiving Stream and Interconnecting Streams to Main Stream
Alamance										
Chester H. Ross Hosiery and Knitting Mill	-	276	P	D.S.	0.006	None	-	62	62	Alamance Cr. to Haw River
Altamahaw										
Glen Raven Mills	-	500	P	D.S. & I.W.	0.031	None	-	1,035	1,035	Haw River
Apex (1)										
Beaver Creek Outfall	1,065	660	M	D.S.	0.066	Primary	0.050	660	429	Beaver Cr. to New Hope River to Haw River
Burlington										
Alamance Creek Plant	24,560	12,000	M	D.S. & I.W.	1.822	Secondary	2.000	22,200	4,290	Little Alamance Cr. to Alamance Cr. to Haw River
Haw River Outfall	-	12,000	M	D.S. & I.W.	2.449	None	-	51,000	51,000	Haw River
Bynum										
O'Dell Mfg. Co.	-	150	P	D.S.	0.004	None	-	38	38	Haw River
Carrboro	1,789	1,550	M	D.S. & I.W.	0.155	Primary	-	1,566	1,018	Morgan Cr. to New Hope River to Haw River
Chapel Hill										
Bolin Creek Plant	9,177	5,500	State	D.S. & I.W.	0.610	Secondary	0.750	7,840	1,960	Bolin Cr. to Little Cr. to New Hope River to Haw River
Morgan Creek Plant	-	5,500	State	D.S. & I.W.	0.558	Secondary	1.500	5,800	580	Morgan Cr. to New Hope River to Haw River
Durham (2)										
Third Fork Plant	71,311	27,000	M	D.S. & I.W.	1.900	Secondary	2.500	32,400	7,400	Third Fork Cr. to New Hope Cr. to New Hope River to Haw River
New Hope Plant	-	8,300	M	D.S. & I.W.	0.800	Secondary	2.000	7,400	1,700	New Hope Cr. to New Hope River to Haw River

TABLE 6

POINTS OF SIGNIFICANT SOURCES OF POLLUTION

CAPE FEAR RIVER BASIN

HAW RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner-ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treatment M.G.D.	Design Capacity M.G.D.	Est. P. E. Before Treatment	Est. P. E. After Treatment	Interconnecting Streams to Main River
Elon College and Town	1,109	1,765	M	D.S. & I.W.	0.150	Sec.	0.250	1,765	265	Gun Br. to Alamance Cr. to Haw River
Gibsonville										
Stoney Creek Plant (N)	1,866	1,000	M	D.S. & I.W.	0.165	Primary	0.200	2,778	2,536	Travis Cr. (Stoney Cr.) to Haw River
Cedar Creek Plant (S)	-	1,000	M	D.S.	0.144 ⁽³⁾ 0.028 ⁽⁴⁾	Primary	0.260	1,470 ⁽³⁾ 360 ⁽⁴⁾	1,350 ⁽³⁾ 330 ⁽⁴⁾	Michael Br. (Cedar Cr.) to Alamance Cr. to Haw River
Graham	5,026	6,000	M	D.S. & I.W.	0.439	None	-	11,749	11,749	Haw River
Greensboro										
North Buffalo Plant	74,389	62,000	M	D.S. & I.W.	8.480	Sec.	6,500	166,000	93,000	N. Buffalo Cr. to Buffalo Cr. to Reedy Fork to Haw River
South Buffalo Plant	-	26,000	M	D.S. & I.W.	3.730	Sec.	3,500	69,000	29,000	S. Buffalo Cr. to Reedy Fork to Haw River
Cone Mills Corp.	-	-	P	I.W.	2,580	None	-	74,000	74,000	N. Buffalo Cr. to Reedy Fork to Haw River
Greensboro-High Point Airport	-	-	P	D.S.	0.010	Sec.	0.010	100	10	Bush Cr. to Reedy Fork to Haw River
Guilford College	800	438	P	D.S.	0.044	Sec.	-	438	66	Horsepen Cr. to Reedy Fork to Haw River
Haw River (Sanitary Dist.)										
Outfall #1	1,175	1,100	S.D.	D.S.	0.110	None	-	1,100	1,100	Haw River
Outfall #2	-	100	S.D.	D.S.	0.010	None	-	100	100	Haw River
A. A. Tew, Abattoir	-	-	P	I.W.	0.002	None	-	116	116	Haw River
Cone Mills Corp.	-	-	P	I.W.	0.334	None	-	13,392	13,392	Haw River

TABLE 6

POINTS OF SIGNIFICANT SOURCES OF POLLUTION

CAPE FEAR RIVER BASIN

HAW RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop.	Owner- ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treat- ment	Design Capa- city M.G.D.	Est. P. E. Before Treatment	Est. P. E. After Treatment	Interconnecting Streams to Main Stream
Hopedale										
Copeland Converting & Finishing Co.	-	600	P	D.S. & I.W.	0.074	None	-	443	443	Stoney Creek to Haw River
Hope Valley Mutual Sewage Disposal Assoc., Inc.	200	260	P	D.S.	0.026	Pri.	0.060	260	200	Third Fork Cr. to New Hope Cr. to New Hope River to Haw River
Kernersville (5)	2,396	650	M	D.S.	0.065	Sec.	-	650	260	Reedy Fork to Haw River
Mebane	2,068	2,000	M	D.S. & I.W.	0.249	Pri.	0.300	3,523	2,297	Moadans Cr. to Back Cr. to Haw River
Ossipee										
Burlington Mills	-	352	P	D.S. & I.W.	0.010	None	-	106	106	Reedy Fork to Haw River
Wissell Fabrics	-	105	P	D.S.	0.001	Pri.	-	105	68	Reedy Fork to Haw River
Pittsboro	1,094	400	M	D.S. & I.W.	0.024	Pri.	0.100	988	692	Robeson Cr. to Haw River
Webster Poultry	-	-	P	I.W.	0.008	None	-	1,500	1,500	Turkey Cr. to Robeson Cr. to Haw River
Reidsville (6)										
Little Troublesome Cr. Plant	11,709	6,000	M	D.S. & I.W.	0.460	Pri.	-	9,000 (7)	7,800 (7)	Little Troublesome Cr. to Haw River
Saxapahaw										
Sellers Mfg. Co.	-	450	P	D.S. & I.W.	0.719	None	-	2,665	2,665	Haw River
Swepsonville	-	850	P	D.S. & I.W.	0.086	None	-	944	944	Haw River
Virginia Mills, Inc.	-	-	P	I.W.	0.056	Grease	-	- (8)	720 (8)	Gum Cr. to New Hope Cr. to New Hope River to Haw River
Swartz Tallow Co.	-	-	P	I.W.	0.056	Grease	-	-	-	
(1) Middle Creek Plant in Neuse River Basin.										
(2) North Side Plant in Neuse River Basin.										
(3) Plant data before removal of Cone Mills Corp. waste in 1956.										
(4) Plant data after removal of Cone Mills Corp. waste in 1956.										
(5) Two Plants in Yadkin River Basin.										
(6) Two Plants in Roanoke River Basin										

(7) Data obtained from study of old plant, new plant put in operation in 1957.

(8) Data obtained from one day study of effluent only.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 1 - Located on Haw River above Troublesome Creek.

Drainage Area (sq.mi.) 77.6

Date	Collected	Day	Time	Discharge	Temp.	Turbidity	pH	Alkalinity	Hardness	Chloride	D.O.	5 Day	B.O.D.	Coliform
1954				cfs	°C	ppm	Range	ppm	as CaCO ₃	ppm	% Sat.	ppm	lbs/day	M.P.N. per 100 ml.
6-2	W		1330	17	21	120	7.2	0	30	4	-	2.3	260	1,500
6-7	M		1445	16	20	120	7.4	0	62	2	8.1	1.9	210	430
6-18	F		0800	51*	20*	1,660*	6.4*	0*	28*	2*	7.5*	2.0*	690*	2,400*
6-29	T		0900	5.8	19	90	7.0	0	40	2	8.0	1.4	55	210
7-13	T		1100	3.7	22	80	7.4	0	42	4	7.7	1.5	37	930
7-25	M		1620	8.4	23	-	6.8	0	34	2	7.5	1.4	79	930
Average				10	21	100	6.4 to 7.4	0	42	3	7.8	1.7	130	800

*Excluded from average because of unseasonable flow.

Station 2 - Located on Troublesome Creek near Reidsville's intake and above Haw River.

Drainage Area (sq. mi.) 55.1

Date	Collected	Day	Time	Discharge	Temp.	Turbidity	pH	Alkalinity	Hardness	Chloride	D.O.	5 Day	B.O.D.	Coliform
1954				cfs	°C	ppm	Range	ppm	as CaCO ₃	ppm	% Sat.	ppm	lbs/day	M.P.N. per 100 ml.
6-2	W		1340	11	21	120	7.2	0	22	4	-	1.1	82	2,400
6-7	M		1425	7.6	19	140	7.3	0	80	3	8.0	1.2	62	430
6-18	F		0745	23*	20*	500*	6.4*	0*	36*	2*	7.6*	1.8*	280*	230*
6-29	T		0920	5.2	20	120	6.9	0	40	2	8.0	1.1	39	930
7-13	T		1115	1	23	55	7.2	0	34	4	7.7	1.5	10	1,500
7-26	M		1610	6.1	24	240	6.7	0	20	2	7.2	1.6	66	1,500
Average				6.2	21	140	6.4 to 7.3	0	39	3	7.7	1.3	52	1,400

*Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 3 - Located on Little Troublesome Creek above point of discharge from Reidsville's sewage and industrial waste treatment plant and below swimming pool.

Drainage Area (sq. mi.) 3.72

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-2	W	1415	0.3	22	140	45	7.4	0	53	32	3	-	-	>8.0#	>16#	4,300
6-7	M	1500	.2	22	210	100	7.4	0	34	72	1	4.9	56	1.4	2	4,300
6-18	F	0830	0.2	18	260	60	6.9	0	36	42	2	7.5	78	2.1	3	21,000
6-29	T	0730	.5	18	90	35	7.1	0	38	44	3	7.7	80	1.9	6	4,300
7-13	T	1140	.2	24	100	15	7.3	0	47	32	7	6.1	72	3.7	5	7,300
7-26	M	1600	.7	24	180	100	6.7	0	41	32	4	6.1	72	8.0	38	24,000
9-23	Th	1008	.1	16	-	-	6.3	0	42	48	4	8.2	82	2.5	2	43,000
Average			0.3	21	160	60	6.3 to 7.4	0	42	43	3	6.8	73	3.3	9	15,000

Excluded from average, indeterminate.

Station 3A - Located on Little Troublesome Creek above Reidsville swimming pool.

9-23	Th	1000	-	16	230	45	6.7	0	42	48	4	7.5	75	2.2	-	7,300
Drainage Area (sq. mi.)																

Station 4 - Located on Little Troublesome Creek below point of discharge from Reidsville's sewage and industrial waste treatment plant.

6-2	W	1500	1.1	22	180	55	7.0	0	79	48	12	-	-	14	100	2,400,000
6-7	M	1515	.9	20	140	45	7.3	0	87	66	13	0.3	3	14	85	240,000
6-18	F	0820	2.3	19	400	55	6.8	0	55	60	10	2.4	26	9.8	150	73,000
6-29	T	0755	.60	18	130	20	6.9	0	104	102	21	0.0	0	28	110	930,000
7-13	T	1215	.7	23	180	45	7.2	0	116	52	22	0.5	6	25	120	930,000
7-26	M	1830	.6	23	360	120	6.7	0	103	44	16	0.1	1	41	170	24,000,000
9-23	Th	1020	.4	16	140	35	7.0	0	87	70	28	0.0	0	39	110	150,000,000
Average			0.9	20	220	55	6.7 to 7.3	0	90	63	17	0.6	6	24	120	26,000,000

Average

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 12.6

Station 5 - Located on Little Troublesome Creek 3.9 miles below
Station 4 also on Little Troublesome Creek.

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
6-2	W	1355	3.0	21	120	50	7.1	0	49	38	11	~	~	11	220	~
6-7	M	1400	2.5	20	140	80	7.3	0	51	46	10	5.2	57	2.4	41	24,000
6-18	F	0725	9.0	20	~	~	6.4	0	27	52	7	5.7	62	5.6	340	210,000
6-29	T	0935	1.4	20	130	30	6.9	0	54	64	10	4.5	49	12	110	9,300
7-13	T	1020	1.8	22	120	55	7.2	0	72	50	17	4.1	47	2.6	32	2,300
7-26	M	1650	3.3	24	240	140	6.6	0	43	30	10	5.0	59	8.8	200	2,300
9-23	Th	1120	2.1	20	42	40	7.0	0	61	60	19	5.3	58	5.5	78	430,000
Average			3.3	21	130	65	6.4 to 7.3	0	51	49	12	5.0	55	6.8	150	110,000

Station 6 - Located on Haw River 4.4 miles below Station 5 on Little Troublesome
Creek and above Burlington's Emergency Haw River Intake.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-4	F	1400	35	23	120	35	7.5	0	32	26	4	8.2	94	1.5	350	~
6-8	T	1313	26	22	100	45	7.6	0	34	72	3	9.9	113	0.3	53	430
6-18	F	0630	112*	20*	1,340*	250*	6.8*	0*	17*	64*	2*	7.4*	80*	2.8*	2,100*	4,300*
6-29	T	1000	15	21	130	25	7.1	0	28	84	3	7.5	83	2.0	200	430
7-13	T	1000	9.9	22	120	60	7.2	0	32	40	4	6.9	78	1.2	80	2,400
7-26	M	1915	26	24	360	160	6.6	0	20	22	4	6.7	79	2.1	370	2,400
9-23	Th	1600	4.0	20	70	10	7.0	0	35	48	10	5.1	55	0.6	16	4,300
Average			19	22	150	55	6.6 to 7.6	0	30	49	4	7.4	84	1.3	180	2,000

* Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 7 - Located on Haw River below Burlington's Emergency Intake and above untreated sewage and industrial waste from Glen Raven Knitting Mills.

Drainage Area (sq. mi.) 188

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
6-4	F	1230	42	21	170	55	6.9	0	24	26	4	6.9	77	1.6	450	430*
6-8	T	1405	104*	23*	170*	100*	7.4*	0	31*	60*	2*	7.0*	80*	1.2*	840*	1,500*
6-18	F	0940	104*	21*	280*	160*	6.8*	0	16*	42*	2*	6.7*	75*	2.1*	1,500*	91
7-2	F	0755	13	24	120	25	7.2	0	30	32	4	6.8	80	1.3	110	430
7-14	W	1105	6.7	27	280	20	7.3	0	30	28	5	6.9	85	1.2	54	2,400
7-26	M	1930	40	24	420	230	6.5	0	18	18	2	5.8	68	1.8	490	73,000
9-23	Th	1615	.8	20	85	15	6.9	0	42	10	4	5.0	54	4.1	22	19,000
Average			21	23	220	70	6.5 to 7.4	0	29	23	4	6.3	73	2.0	230	

* Excluded from average because of unseasonable flow.

Station 8 - Located on Haw River below untreated sewage and industrial waste from Glen Raven Knitting Mills and above Reedy Fork.

Drainage Area (sq. mi.) 189

6-4	F	1250	42	23	170	25	7.3	0	30	18	3	6.7	77	2.2	620	-
6-8	T	1420	104*	23*	180*	100*	7.5*	0*	33*	46*	3*	7.1*	82*	4.2*	2,900*	2,400*
6-18	F	0555	104*	21*	720*	160*	7.2*	0*	29*	62*	2*	7.4*	82*	2.1*	1,500*	930*
7-2	F	0820	13	24	120	25	6.9	0	30	32	5	6.2	73	2.2	190	930
7-14	W	1050	6.7	26	230	20	7.1	0	34	28	5	4.9	60	1.5	68	210
7-26	M	1945	40	24	520	180	6.6	0	16	20	2	5.5	65	2.5	680	4,300
9-23	Th	1625	.8	20	460	15	6.8	0	130	130	96	0.3	3	53	290	930,000
Average			21	23	300	55	6.6 to 7.5	0	48	45	22	4.7	56	12	370	230,000

* Not included in average, unseasonable flow.

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 8A -- Located on Reedy Fork below the point of effluent discharge from Kernersville's Reedy Fork sewage treatment plant. Drainage Area (sq. mi.) .186

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
10-20	W	1300	.3	16	140	25	6.8	0	72	50	19	4.2	42	41	83	4,300,000
10-28	Th	1430	.2	12	90	15	6.6	0	47	24	19	2.5	23	38	51	1,500,000
11-9	T	1200	.3	11	-	-	6.9	0	67	45	17	5.3	48	25	51	4,600,000
Average			.3	13	120	20	6.6 to 6.9	0	62	40	18	4.0	38	35	62	3,500,000

Station 8B -- Located on Reedy Fork 0.8 of a mile below Station 8A also on Reedy Fork and above intake to Berry Water Gardens. (Fishery) Drainage Area (sq. mi.) .803

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
10-20	W	1400	.3	12	70	15	6.7	0	40	44	13	7.7	71	5.7	12	150,000
10-28	Th	0500	.2	13	70	10	6.8	0	96	24	14	5.6	53	7.0	9	150,000
11-9	T	1215	.3	11	-	-	7.0	0	48	32	11	8.9	80	3.9	8	24,000
Average			.3	12	70	12	6.7 to 7.0	0	61	33	13	7.4	68	5.5	10	110,000

Station 8C -- Located on Reedy Fork 3.8 miles below Station 8B also on Reedy Fork. Drainage Area (sq. mi.) 5.8

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
10-20	W	1530	1.9	11	140	30	6.5	0	32	54	7	9.8	88	0.8	10	24,000
10-28	Th	0525	1.5	13	95	20	6.8	0	30	26	6	8.4	79	1.7	17	7,300
11-9	T	1300	1.5	11	-	-	7.2	0	31	30	4	9.0	81	0.8	8	930
Average			1.6	12	120	25	6.5 to 7.2	0	31	37	6	9.1	83	1.1	12	11,000

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 8D - Located on Reedy Fork 7.7 miles below Station 8C and above Lake Brandt.

Drainage Area (sq. mi.) 34.2

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
10-20	W	1630	13	11	380	45	6.5	0	32	60	4	8.5	77	0.7	61	9,300
10-28	Th	0555	6.5	14	-	-	6.4	0	24	24	4	7.9	76	2.8	120	1,500
11-9	T	1330	2.5	11	-	-	6.7	0	19	21	3	9.1	82	0.6	10	230
Average			7.3	12			6.4 to 6.7	0	25	35	4	8.5	78	1.4	64	3,700

Station 9 - Located on Horsepen Creek above unnamed tributary receiving effluent from Guilford College's sewage treatment plant; also below possible oil drainage.

Drainage Area (sq. mi.) 9.10

6-4	F	0942	2.6	22	80	30	7.7	0	48	40	3	8.7	99	0.8	14	9,300
6-8	T	1110	2.3	25	80	70	7.8	0	44	86	1	9.0	107	0.6	9	360
6-15	T	1140	2.3	28	90	30	7.4	0	47	52	4	8.2	104	2.0	31	910
6-24	Th	1510	1.7	30	80	35	7.7	0	49	50	5	8.7	114	1.9	22	9,300
8-10	T	1945	1.8	25	560*	200*	7.4	0	37	36	4	6.7	80	1.5	18	9,300
9-20	M	0615	1.1	22	80	20	9.1	17	84	30	7	9.3	106	1.3	10	9,300
Average			2.0	25	80	35	7.4 to 9.1	3	52	49	4	8.4	102	1.4	17	5,800

*Excluded from average as high color and turbidity are due to local runoff.

Station 9A (Old B-1) - Located at Guilford College bathing lake above ditch receiving effluent from Guilford College's sewage treatment plant.

Drainage Area (sq. mi.)

8-26	Th	1240		29	60	10	7.2	0	27	40	3	5.3	68	5.4		36
9-17	F	0830		21	65	20	7.2	0	27	30	3	7.3	81	2.5		

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 10--Located on unnamed stream below pasture and ditch receiving effluent from Guilford College's sewage treatment plant.

Drainage Area (sq. mi.) 3.05

Date Collected 1954	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20° C	lbs/day 25° C	Coliform M. P. N. per 100 ml.
6-4	F	0920	.5	20	70	20	7.6	0	32	20	3	8.3	90	2.8	9	-
6-8	T	1050	.2	20	130	65	7.5	0	35	86	2	8.2	89	1.2	.2	43,000
6-15	T	1150	.4	23	70	20	7.3	0	32	40	2	8.0	92	2.3	6	360
6-24	Th	1525	.3	23	65	35	7.3	0	31	40	4	7.8	90	2.6	5	360
8-10	T	1930	-	26	140	30	7.3	0	37	36	5	6.5	79	1.5	-	2,400
9-20	M	0600	.01	21	46	10	7.2	0	50	50	7	7.3	81	0.3	1	24,000
Average			0.3	22	85	30	7.2 to 7.6	0	36	45	4	7.7	87	1.8	5	14,000

Station 11 -- Located on Horsepen Creek 2.2 miles below Station 10 on unnamed tributary and above Lake Brandt.

Date Collected 1954	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20° C	lbs/day 25° C	Coliform M. P. N. per 100 ml.
6-4	F	1020	4.0	19	90	50	7.6	0	32	22	2	8.0	85	0.5	14	-
6-8	T	1130	3.2	23	90	55	7.7	0	50	62	1	8.1	93	0.6	13	730
6-15	T	1215	3.4	24	70	25	7.4	0	45	42	2	7.5	88	0.9	21	730
6-24	Th	1550	2.2	24	70	35	7.4	0	74	50	4	8.0	94	2.0	30	360
8-9	M	1330	1.2	26	160	80	7.7	0	43	50	4	8.2	100	2.0	16	43,000
9-20	M	0630	0.8	21	55	15	7.0	0	43	46	6	7.2	80	1.0	5	9,300
Average			2.5	23	90	45	7.0 to 7.7	0	48	45	3	7.8	90	1.2	17	11,000

Drainage Area (sq. mi.) 15.9

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 11A (Old W3)-- Located on Reedy Fork (Lake Brandt) at Greensboro's intake. Drainage Area (sq. mi.)

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
1954													
8-16	M	1400		29	130	20	7.7	0	29	28	7.8	2.8	91
8-26	Th	1100		29	220	20	7.3	0	29	40	5.4	5.5	93
9-17	F	0630		22	180	30	7.3	0	27	40	6.3	2.2	430
Average				27	180	25	7.3 to 7.7	0	28	36	6.5	3.5	210

Station 11B (Old W4) -- Located on Richland Creek (Richland Lake) at Cone Mills Corporation intake. Drainage Area (sq. mi.)

8-16	M	1545		29	14	10	7.6	0	20	26	7.8	0.9	<36
8-26	Th	1130		29	14	7	7.4	0	17	32	8.3	1.4	23
9-17	F	0705		22	16	2	7.4	0	19	32	5.9	0.8	<36
Average				27	15	6	7.4 to 7.6	0	19	30	7.0	1.0	<36

Station 11C (Old W5) -- Located at raw water tap at Cone Mills Corporation Filter Plant. Drainage Area (sq. mi.)

8-16	M	1445		29	28	10	8.0	0	17	22	8.2	0.8	910
8-26	Th	1400		29	16	6	7.2	0	19	34	7.3	1.2	23
9-17	F	0750		22	11	10	7.2	0	19	34	6.9	1.1	150
Average				27	18	9	7.2 to 8.0	0	18	30	7.5	1.0	360

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 11D (Old B2) - Located at Cone Mills Corporation YMCA Camp Herman Bathing Lake. Drainage Area (sq. mi.)

Date Col-lected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol, ppm	Alkalinity Total, ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
8-26	Th	1330		29	140	20	7.1	0	19	30	2	7.1	1.9	-
9-17	F	0920		26	65	15	7.2	0	19	38	3	7.5	0.8	<36
Station 12 - Located on Reedy Fork above Buffalo Creek and the pollution therein from Greensboro.														
6-4	F	1430	22	23	130	25	7.3	0	32	30	2	6.2	1.5	-
6-8	T	1245	9.1	23	160	100	7.3	0	36	80	2	7.0	1.0	930
6-22	T	1200	28	26	-	-	7.3	0	30	44	2	6.7	3.1	930
7-2	F	0840	20	25	70	20	6.7	0	28	30	2	6.8	1.2	36
8-9	M	1600	3.6	25	980*	320*	7.1	0	30	50	2	6.7	2.0	-
8-24	T	1400	22**	26**	260**	130**	7.0**	0**	25**	38**	6**	5.7**	7.5**	230**
9-20	M	0545	1.8	22	-	-	6.6	0	32	48	4	5.2	1.7	430
Average			14	24	120	50	6.6 to 7.3	0	31	47	2	6.4	1.8	580

* Not included in average as high color and turbidity are due to local runoff.

** Not included in average, unseasonable flow.

Station 13A - Located on North Buffalo Creek at Westover St. in Greensboro 0.4 of a mile above Station 13 in order to locate pollution reaching the latter station also on North Buffalo Creek.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol, ppm	Alkalinity Total, ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
8-24	T	1025		23	340	100	7.3	0	47	50	6	5.7	4.2	150,000
9-6	M	1040		24	95	10	7.2	0	71	60	18	4.3	2.5	240,000
9-30	Th	1625		24	120	50	6.5	0	84	88	13	3.0	2.0	43,000
Average				24	190	55	6.5 to 7.3	0	67	66	12	4.3	2.9	140,000

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 13B - Located on unnamed tributary at Fairmont St. in Greensboro 0.3 of a mile above Station 13 on North Buffalo Creek in order to locate pollution reaching the latter station. Drainage Area (sq. mi.) 1.06

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
8-24	T	1015		23	100	20	7.2	0	101	108	19	3.3	38	9.7	15,000
9-6	M	1050		24	42	10	7.2	0	102	124	29	1.5	18	4.2	240,000
9-30	Th	1640		24	70	35	6.7	0	112	90	19	0.2	2	5.6	930,000
Average				24	70	20	6.7 to 7.2	0	105	107	22	1.7	19	6.5	400,000

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 13 -- Located on North Buffalo Creek at Garland St. above Greensboro's filter plant backwash drain.

Drainage Area (sq. mi.) 10.9

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B, O, D, lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954															
6-9	W	1030	1.5	30	160	100	8.4	1	74	7	9.2	121	7.1	72	1,100,000
6-15	T	1100	2.0	29	140	50	7.5	0	50	6	8.5	109	4.1	55	93,000
6-22	T	1040	1.5	30	100	20	8.7	5	61	10	12.9	170	6.3	64	230,000
7-9	F	0758	.2	22	140	20	7.1	0	68	9	4.5	51	6.5	9	930,000
7-19	M	1500	1.5	29	280	200	7.3	0	44	4	8.7	112	5.1	52	230,000
7-30	F	0630	.3	24	55	50	6.9	0	69	13	4.5	53	3.2	6	91,000
8-9	M	1305	.4	28	180	140	8.7	3	49	7	13.0	165	6.8	18	430,000
8-24	T	1010	2.0	23	280	55	7.4	0	48	6	7.9	91	3.2	43	93,000
9-6	M	1100	1.6	25	180	10	8.8	4	76	15	14.9	177	2.3	25	9,300
9-30	Th	1705	2.0	24	70	20	6.5	0	80	11	6.3	74	3.3	45	2,300
Average			1.3	26	160	65	6.5 to 8.8	1	62	9	9.0	112	4.8	39	320,000

Date Col- lected	Day	Time	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
1954					
6-9	W	1030	0	0	0
6-15	T	1100	0	0	0
6-22	T	1040	0	0	0
7-9	F	0758	0	0	0
7-19	M	1500	0	0	0
7-30	F	0630	0	0	0
8-9	M	1305	0	0	0
8-24	T	1010	0	0	0
9-6	M	1100	0	0	0
9-30	Th	1705	0	0	0
Average			0	0	0

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 13C - Located on North Buffalo Creek at Church St. in Greensboro above untreated Drainage Area (sq. mi.) 14.2
industrial waste from Cone Mills Corporation.

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-24	T	1045	2.0	23	180	25	7.4	0	76	11	6.9	79	2.9	39	7,300
9-6	M	1125	1.2	24	70	10	7.4	0	84	16	6.9	81	2.2	18	15,000
9-30	Th	1620	.4	24	90	35	6.6	0	90	20	6.2	73	2.2	6	24,000
Average			1.2	24	110	25	6.6 to 7.4	0	83	16	6.7	78	2.4	21	15,000

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 14 - Located on North Buffalo Creek at Summit St. in Greensboro below untreated industrial waste from Cone Mills Corporation.

Drainage Area (sq. mi.) 21.7

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness As CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1954	6-9	W	1340	5.0	35	440	180	11.6	424	553	26	0	63	0.0	0	210	7,100
	6-15	T	0920	7.4	31	420	90	11.4	702	1,030	32	-	67	0.0	0	570	28,000
	6-22	T	1005	8.2	32	580	20	11.5	411	582	70	0	56	0.0	0	290	16,000
	7-9	F	0630	6.2	32	720	120	11.6	592	761	60	0	179	0.0	0	250	10,000
	7-19	M	1530	6.8*	30*	210*	60*	8.8*	6*	80*	54*	-*	36*	0.7*	9*	85*	3,900*
	7-30	F	0730	3.4*	26*	42*	20*	7.0*	0*	52*	60*	-*	12*	5.2*	63*	2.7*	62*
	8-9	M	1245	12.0*	30*	140*	140*	11.1*	197*	277*	30*	0*	40*	2.8*	37*	130*	11,000*
	8-24	T	1125	8.8	23	460	160	11.5	407	575	32	0	58	0.0	0	330	20,000
	9-6	M	1200	1.5*	26*	28*	10*	7.5*	0*	75*	80*	0*	14*	3.2*	39*	3.8*	38*
	9-30	Th	1530	3.0*	31	460	35	11.2	888	978	28	0	111	0.0	0	560	11,000
Average				6.4	31	520	100	7.0 to 11.6	571	747	41	0	89	0.0	0	370	15,000

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
1954	6-9	W	1340	<360#	.10	0	.73
	6-15	T	0920	15	.08	0	0
	6-22	T	1005	73	.07	0	0
	7-9	F	0630	230	.94	0	0
	7-19	M	1530	240,000*	<.05*	0*	0*
	7-30	F	0730	7,300*	0*	0*	0*
	8-9	M	1245	4,300*	.06*	0*	0*
	8-24	T	1125	36	.10	0	0
	9-6	M	1200	29,000*	0*	0*	0*
	9-30	Th	1530	910	.14	-	0
Average				250	.24	0 usually	0

* Not included in average as industrial waste not flowing or just started to overflow.

Excluded from average, indeterminate.

TABLE 7
ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

72

Station 15 - Located on North Buffalo Creek below the point of effluent discharge from Greensboro's North Buffalo Creek sewage and industrial waste treatment plant and untreated waste from Cone Mills Corporation. Drainage Area (sq. mi.) 23.0

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness As CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm lbs/day 20°C 25°C	
1954	6-9	W	1430	25	31	640	220	11.0	332	590	108	-	57	0.0	0	>130# >22,000#
	6-15	T	1015	22	30	580	120	11.0	280	584	30	0	125	0.0	0	>1,300# >190,000#
	6-22	T	0930	17	29	580	100	11.3	391	621	40	0	119	0.0	0	340 39,000
	6-24	Th	1245	24	30	980	160	10.8	277	534	100	-	92	0.0	0	260 42,000
	7-9	F	0605	13	28	780	140	11.0	261	491	70	0	95	0.0	0	280 25,000
	7-19	M	1610	25*	29*	500*	180*	9.2*	39*	230*	52*	-	10*	0.0*	0*	130* 20,000*
	7-30	F	0740	7*	26*	210*	100*	6.6*	0*	90*	68*	-*	23*	0.0*	0*	50* 2,400*
	8-10	T	1845	28	26	1,020	800	10.9	225	400	60	0	58	0.0	0	210 38,000
	8-24	T	1200	22	25	260	120	11.2	357	605	48	0	84	0.0	0	230 34,000
	9-6	M	1400	19*	28*	180*	15*	7.2	0*	135*	84*	0*	28*	0.0	0*	-
	9-30	Th	1545	25	30	540	30	10.8	502	902	84	0	119	0.0	0	510 86,000
	10-26	T	1324	19	32	-	-	11.0	430	698	70	-	70	0.0	0	270 35,000
Average				22	29	680	210	6.6 to 11.3	339	603	68	0	91	0.0	0	300 43,000

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
1954	6-9	W	1430	<360#	.16	.68	0
	6-15	T	1015	36	.10	0	0
	6-22	T	0930	240	0.06	0	0
	6-24	Th	1245	1,500	-	.40	0
	7-9	F	0605	150	0.94	0	0
	7-19	M	1610	>1,100,000*	0.05*	0*	0*
	7-30	F	0740	>11,000,000*	0.19*	0*	0*
	8-10	T	1845	4,300	0.05	0	0
	8-24	T	1200	9,300,000	0.07	0	0
	9-6	M	1400	2,400,000*	0.05*	0*	0*
	9-30	Th	1545	43,000	0.20	1.0	0
	10-26	T	1324	-	-	-	-
Average				1,300,000	.23	.26	0

Excluded from average, indeterminate.

* Not included in average, industrial waste not flowing or just started to flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 16 - Located on Muddy Creek in Greensboro in order to define sanitary conditions in drainage area. Drainage Area (sq. mi.) 3.98

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 mL
6-9	W	1530	.4	29	90	100	8.1	0	123	198	119	9.0	115	4.3	12	9,500
6-15	T	0945	.4	26	65	15	7.4	0	98	20	30	6.7	82	2.4	6	9,300
6-22	T	1030	.3	25	49	10	7.7	0	101	140	48	7.9	94	1.2	2	4,300
6-24	Th	1320	.3	28	65	40	7.9	0	103	120	44	8.9	113	2.1	4	910
7-9	F	0745	.3	22	42	50	7.4	0	96	122	39	5.6	64	2.9	6	9,300
7-19	M	1630	.3	26	120	20	7.2	0	90	114	49	6.7	82	3.9	8	43,000
7-30	F	0610	.3	24	110	160	7.3	0	90	122	44	6.9	81	2.5	5	4,300
8-10	T	1730	.2	26	160	110	7.2	0	61	82	26	6.5	79	1.7	2	24,000
Average			0.3	26	90	65	7.2 to 8.1	0	95	115	50	7.3	89	2.6	6	13,000

TABLE 7
ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

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Station 17 - Located on North Buffalo Creek 3.0 miles below Station 15
also on North Buffalo Creek.

Drainage Area (sq. mi.) 36.4

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness As CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. %	5 Day B.O.D. ppm lbs/day 20°C 25°C
1954	6-9	W	0600	27	30	680	160	10.7	267	595	72	0	-	0.0	>120#
	6-16	W	1115	18	27	520	90	10.0	145	442	46	-	76	0.0	240
	6-22	T	0755	17	24	-	-	9.7	112	293	84	-	78	0.0	170
	6-24	Th	1640	27	29	780	160	10.5	247	540	124	-	73	0.0	300
	7-9	F	0958	14	26	580	140	10.4	171	396	78	0	92	0.0	200
	7-19	M	1840	29*	25*	540*	180*	8.8*	15*	196*	66*	-	55*	0.0*	85*
	7-30	F	0555	12*	24*	180*	80*	6.9*	0*	127*	70*	-	31*	0.0*	130*
	8-9	M	1430	31*	29*	320*	230*	9.4*	38*	172*	54*	0*	47*	0.0*	58*
	8-24	T	1300	17	25	340	60	9.8	97	341	52	-	68	0.0	160
	9-6	M	1430	9.5*	27*	160*	10*	7.5*	0*	159*	72*	0*	28*	0.0*	-
	9-30	Th	1725	23	25	780	120	10.6	372	747	28	0	114	0.0	530
	10-26	T	2024	24	21	-	-	10.4	272	523	46	-	65	0.0	220
Average				21	26	620	120	6.9 to 10.7	210	485	66	0	81	0.0	260

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
1954	6-9	W	0600	360	0.24	4.0	0
	6-16	W	1115	230	0.10	2.2	0
	6-22	T	0755	9,300	-	0.88	-
	6-24	Th	1640	430	-	4.6	-
	7-9	F	0958	9,300	0.85	-	0
	7-19	M	1840	>1,100,000*	0.05*	0*	0*
	7-30	F	0555	>11,000,000*	0.25*	0.40*	0*
	8-9	M	1430	9,300*	0.06*	0*	0*
	8-24	T	1300	4,300,000	<0.05#	0	0
	9-6	M	1430	2,400,000*	0.06*	0*	0*
	9-30	Th	1725	4,300	0.28	1.0	0
	10-26	T	2024	-	-	-	-
Average				620,000	.37	2.1	0

Excluded from average, indeterminate.

* Not included in average as industrial waste not flowing or just starting to flow.

ANALYTICAL RESULTS HAW RIVER DRAINAGE AREA

Station 18 -- Located on North Buffalo Creek 4.8 miles below Station 17
also on North Buffalo Creek and above South Buffalo Creek.

Drainage Area (sq. mi.) 43.7

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness As CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm lbs/day 20°C 25°C
1954	6-10	T	1015	102*	26*	940*	370*	9.4	29*	180*	0	26*	0.0	100* 69,000*
	6-16	W	1415	19	26	360	80	10.0	145	46	-	76	0.0	140 18,000
	6-22	T	0735	22	23	260	50	9.3	63	122	-	54	0.0	490 73,000
	7-9	F	1015	20	25	620	140	10.0	153	76	0	61	0.0	170 23,000
	7-19	M	1935	28*	25*	240*	70*	7.4*	0*	186*	-*	33*	0.0	50* 9,500*
	7-30	F	0532	16*	24*	85*	160*	7.0*	0*	127*	0*	29*	0.0*	40* 4,300*
	8-9	M	1225	20*	29*	180*	100*	7.8*	0*	142*	-*	34*	0.0*	21* 2,800*
	8-24	T	1330	17	25	70	15	8.9	19	72	0	46	0.0	140 16,000
	9-6	M	1445	10*	28*	110*	15*	7.0*	0*	189*	0*	28*	0.0*	43* 2,900*
	9-30	Th	1500	16	26	780	270	10.1	313	34	-	104	0.0	450 49,000
	10-27	W	0812	30	17	-	-	10.3	243	44	-	59	0.0	250 51,000
Average				21	24	420	110	7.0 to 10.3	156	66	0	67	0.0	270 38,000

SPECIAL ANALYSES

Date Collected	ppm Cyanide	ppm Fluorides
4/29/55	.13	
6/25/55	2.4	

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
1954	6-10	T	1015	43,000*	.05*	0	0
	6-16	W	1415	<360#	.07	1.8	0
	6-22	T	0735	23,000	<.05#	.05	0
	7-9	F	1015	3,600	1.2	2.0	0
	7-19	M	1935	>1,100,000#	<.05*	0*	0*
	7-30	F	0532	>11,000,000#	.12*	0*	0*
	8-9	M	1225	150*	<.05*	0*	0*
	8-24	T	1330	4,300,000	.06	1.28	0
	9-6	M	1445	2,400,000*	.08*	0*	0*
	9-30	Th	1500	910	-	2.0	-
	10-27	W	0812	-	-	-	-
Average				1,100,000	.44	1.4	0

#Excluded from average, indeterminate

*Not included in average as unseasonable flow or industrial waste not flowing or just started to flow.

TABLE 7
ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 19 - Located on South Buffalo Creek above Greensboro's Southside industry. Drainage Area (sq. mi.) 7.33

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness As CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm lbs/day 20° C	25° C
6-9	W	1100	1.2	24	180	55	8.1	0	55	70	-	15	9.0	106	0.6	5
6-16	W	1300	2.3	23	1,280*	550*	7.1	0	34	40	0	2	7.3	85	2.9	45
6-23	W	1405	1.2	24	240	60	7.4	0	42	100	-	4	7.7	91	1.8	15
7-9	F	0835	.6	22	320	100	7.2	0	42	62	-	4	6.6	75	1.4	6
7-19	M	1705	1.2	26	480	200	7.1	0	53	54	-	5	7.4	90	1.1	9
8-10	T	1520	1.4	24	1,380*	1,200*	7.3	0	37	46	-	8	7.4	87	3.1	29
8-31	T	0900	.9	22	340	60	7.0	0	45	64	-	7	6.4	73	3.2	19
9-16	Th	0650	.3	22	130	15	7.4	0	56	60	0	5	8.4	95	2.3	5
10-6	W	1650	.3	25	90	20	6.6	0	53	72	0	6	6.6	79	2.1	4
Average			1.6	24	250	75	6.6 to 8.1	0	46	63	0	6	7.4	87	2.1	15

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
6-9	W	1100	4,300	0	0	0
6-16	W	1300	2,400	0	0	0
6-23	W	1405	4,300	0	0	0
7-9	F	0835	4,300	0	0	0
7-19	M	1705	9,300	0	0	0
8-10	T	1520	24,000	0	0	0
8-31	T	0900	73,000	0	0	0
9-16	Th	0650	4,300	0	0	0
10-6	W	1650	24,000	0	0	0
Average			17,000	0	0	0

SPECIAL ANALYSES

Date Collected

4-29-55 0 ppm Cyanide

6-25-55 1.0 ppm Fluoride

*Excluded from average as high color and turbidity are due to local runoff.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 20 -- Located on South Buffalo Creek below Greensboro's southside industry and above point of effluent discharge from Greensboro's South Buffalo Creek sewage and industrial waste treatment plant. Drainage Area (sq. mi.) 29.6

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Acidity Mineral ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
Col. 1954															
6-9	W	1200	1.3	25	46	20	3.2	-	-	400	-	222	6.7	80	29
6-16	W	1335	8.0*	24*	1,600*	370*	3.2*	-	-	-	-	462*	7.0*	82*	250*
6-23	W	1440	2.9	26	36	10	2.9	-	-	-	-	893	6.2	76	-
7-9	F	0930	2.8	23	42	20	2.9	-	314	212	-	22	5.4	62	26
7-19	M	1740	2.8	26	210	25	1.8	4,390	4,960	228	-	298	-	-	-
8-10	T	1030	4.5	24	140	120	3.0	-	-	192	-	21	6.5	76	110
8-31	T	0935	5.0	23	180	40	3.2	161	372	116	-	11	6.5	75	95
9-16	Th	0630	.3	26	80	20	3.0	901	1,413	202	0	22	5.6	68	7
10-6	W	1445	.7	25	55	6	2.6	1,413	3,704	-	0	28	4.0	48>15#	>71#
Average			2.5	25	100	35	1.8 to 3.2	1,716	2,150	225		190	5.8	69	53

				SPECIAL ANALYSES			
				Date Collected			
Col. 1954	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm	
6-9	W	1200	<360#	<.05	0	1.43	4-29-55 <.05 Cyanide ppm
6-16	W	1335	430*	0*	0*	0*	6-25-55 200 ppm Fluoride
6-23	W	1440	<36#	0	0	.40	4-12-56 1.0 ppm Fluoride
7-9	F	0930	1,500	<.05	0	0	
7-19	M	1740	<360#	-	-	-	
8-10	T	1030	93,000	-	0	0	
8-31	T	0935	93,000	0	0	0	
9-16	Th	0630	910	<.05	0	<.05#	
10-6	W	1445	2,300	<.05	0	<.05#	
Average			38,000	<.05	0	.36	

#Excluded from average -- indeterminate.

*Excluded from average because of unreasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 21 - Located on South Buffalo Creek below point of effluent discharge from Greensboro's South Buffalo Creek sewage and industrial waste treatment plant.

Drainage Area (sq. mi.) 31.3

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Acidity Mineral ppm	Hardness as CaCO ₃ ppm	Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.
1954	W	1320	7.0	26	440	220	7.4	0	120	114	-	80	0.0	0
6-9	W	1030	15*	25*	65*	20*	3.7*	-	-	80*	0*	-	5.4*	64*
6-16	W	1500	5.6	26	240	30	6.5	0	91	170	0	170	0.0	0
6-23	W	0940	5.0	26	210	70	5.5	-	-	242	-	192	0.0	0
7-9	F	1800	8.5	27	220	75	4.3	-	0	62	-	67	0.0	0
7-19	T	1700	9.4	26	680	500	6.7	0	47	76	-	157	0.8	10
8-10	T	0950	10.4	25	230	80	6.8	0	53	100	-	119	0.0	0
8-31	Th	0615	5.6	27	260	35	6.6	0	102	110	-	373	0.0	0
9-16	W	1415	3	24	210	10	6.6	0	205	144	0	298	0.0	0
10-6	Average		6.8	26	320	130	3.7 to 7.4	0	88	127	0	180	0.0	0

Date	Day	Time	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
1954	W	1320	18	850	>11,000,000#	<.05	-	0
6-9	W	1030	-	-	<3,600#	0*	0*	.4*
6-16	W	1500	34	1,300	>1,100,000#	0	0	.58
6-23	F	0940	23	780	9,300,000	<.05	0	0
7-9	M	1800	9.3	530	43,000,000	<.05	0	0
8-10	T	1700	33	2,100	46,000,000	<.05	0	0
8-31	T	0950	54	3,800	>11,000,000,000#	.16	0	.2
9-16	Th	0615	56	2,100	2,300,000	<.05	.4	<.05#
10-6	W	1415	53	1,100	240,000,000	<.05	1.2	<.05#
Average			35	1,600	68,000,000	<.05	.2	.16

SPECIAL ANALYSES

Date Collected

4-29-55 .07 ppm Cyanide
6-25-55 56 ppm Fluoride

#Excluded from average, indeterminate.

*Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 22 -- Located on South Buffalo Creek 7.0 miles below Station 21 also on this creek. Drainage Area (sq. mi.) 39.1

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. ppm	O. %	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1954																
6-9	W	1620	7.7	25	70	20	3.8	-	-	520	-	70	4.9	58	8.4	440
6-16	W	1010	9.1	24	100	15	4.0	-	-	-	-	64	3.5	41	-	-
6-23	W	1140	7.9	25	65	15	4.3	-	-	-	-	54	3.3	39	-	-
7-9	F	1021	6.3	24	90	25	4.3	-	-	324	-	138	1.9	22	12	510
7-19	M	1425	5.0	25	180	45	6.8	0	40	56	-	173	0.4	5	11	370
8-10	T	1815	9.4	26	1,380**	1,000**	6.0	0	10	58	-	49	1.8	22	5.3	340
8-31	T	1035	14*	23*	680*	80*	6.5*	0*	21*	64*	-	27*	4.0*	16*	4.3*	410*
9-16	Th	0600	6.6	20	170	20	6.2	0	17	94	0	133	1.7	18	6.6	290
10-6	W	1340	5.2	24	240	10	6.5	0	193	104	0	297	0.0	0	31	1,100
Average			7.2	24	130	20	3.8 to 6.8	0	65	193	0	122	2.2	26	12	510

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
1954						
6-9	W	1620	360	<.05	0	.6
6-16	W	1010	93,000	0	0	1.2
6-23	W	1140	3,600	0	0	.54
7-9	F	1021	43,000	0	0	1.5
7-19	M	1425	2,400,000	<.05	0	0
8-10	T	1815	24,000,000	0	0	0
8-31	T	1035	7,300,000*	0*	0*	0*
9-16	Th	0600	930,000	<.05	0	0
10-6	W	1340	93,000,000	-	0	<.05#
Average			15,000,000	<.05	0	.55

#Excluded from average, indeterminate.

*Excluded from average, because of unseasonable flow.

**Excluded from average as high color and turbidity influenced by local runoff.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 23 - Located on South Buffalo Creek 2.7 miles below Station 22, also on this Drainage Area (sq. mi.) 44.7 creek, and 0.1 of a mile above North Buffalo Creek.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
6-10	Th	1035	12	22	720	500	4.2	-	0	120	-	145	5.9	67	5.2	420
6-16	W	1430	12	25	260	80	6.6	0	16	78	-	173	5.9	70	-	-
6-23	W	0930	9	24	14	20	7.3	0	32	136	-	104	5.7	67	7.5	460
7-19	M	1915	6.7	25	1,180	350	5.8	0	18	42	-	50	6.2	74	8.9	400
8-10	T	1755	18*	25*	520*	350*	6.7*	0*	69*	70*	-	283*	-	-	35*	4,300*
8-31	T	1055	18*	22*	680*	80*	6.5*	0*	17*	58*	-	17*	6.5*	74*	-	-
9-16	Th	0530	5.3	20	120	7	7.2	0	104	84	0	295	4.0	43	8.8	310
10-6	W	1900	4.4	22	180	6	6.6	0	117	100	0	332	0.0	0	-	280
10-27	W	0800	9	17	-	-	6.6	0	24	80	-	158	7.2	73	4.6	-
Average			8.3	22	420	160	4.2 to 7.3	0	44	92	0	180	5.0	56	7.0	370

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
6-10	Th	1035	910	<.05	0	1.9
6-16	W	1430	< 360#	0	0	0
6-23	W	0930	9,300	0	0	0
7-19	M	1915	24,000	0	0	0
8-10	T	1755	2,400,000*	<.05*	0*	0*
8-31	T	1055	-	0*	-	0*
9-16	Th	0530	430,000	<.05	0	0
10-6	W	1900	240,000	<.05	0	0
10-27	W	0800	-	-	-	-
Average			140,000	<.05	0	0 Usually

SPECIAL ANALYSES

Date Collected

4-29-55 <.05 ppm Cyanide
6-25-55 48 ppm Fluoride

Excluded from average, indeterminate.

* Not included in average because of unreasonable flow.

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 24 - Located on Buffalo Creek 7.0 miles below junction of South Buffalo Creek and North Buffalo Creek and 1.2 miles above Reedy Fork. Drainage Area (sq. mi.) 99.7

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm lbs/day 20°C 25°C
6-10	1954	Th	1050	88*	23*	720*	300*	9.2*	38*	222*	104*	-*	93*	0.0*	0*	>27#
6-17		Th	1255	65	23	360	110	9.2	41	238	60	-	125	0.0	0	120
6-23		W	0940	33	24	18*	50	7.5	0	194	120	0	64	0.0	0	45
8-10		T	0822	120*	25*	3,060*	1,500*	8.3*	0*	171*	40	-*	41*	0.0*	0*	64*
8-25		W	1015	29	24	110	25	7.3	0	144	64	0	44	0.0	0	34
9-15		W	1510	25	22	110	10	8.6	12	246	70	0	82	0.0	0	60
9-20		M	0530	11	22	260	30	9.2	70	377	68	0	97	0.0	0	180
9-27		M	1520	17**	22**	440**	60**	8.8**	41**	426**	44**	-	99**	0.0**	0**	440**
10-28		Th	0342	32	14	-	-	8.9	41	310	84	-	53	0.0	0	90
Average				33	22	210	45	7.3 to 9.2	27	252	78	0	78	0.0	0	88

SPECIAL ANALYSES

Date Collected

4-29-55 0.09 ppm Cyanide
6-25-55 12.8 ppm Fluoride

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm
6-10	1954	Th	1050	240,000*	<.05#	0*	0*
6-17		Th	1255	15,000	<.05#	.84	0
6-23		W	0940	43,000	0	.4	0
8-10		T	0822	2,400,000*	.06*	.8*	0*
8-25		W	1015	9,300,000	.06	0	0
9-15		W	1510	36,000	<.05#	0	0
9-20		M	0530	24,000	.13	.3	0
9-27		M	1520	93,000**	-	-	-
10-28		Th	0342	-	-	-	-
Average				1,900,000	.06	.3	0

Excluded from average - indeterminate.

* Not included in average because of unseasonable flow.

** Excluded from average because of slug effect of waste.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 25 - Located on Reedy Fork 2.9 miles below Station 24 on Buffalo Creek.

Drainage Area (sq. mi.) 241

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-10	Th	1115	174*	23*	5,100*	2,400*	7.4*	0*	65*	36*	17*	2.4*	28*	>11#	>13,000#	240,000*
6-17	Th	1305	78	23	320	60	7.8	0	175	56	56	1.7	20	56	29,000	43,000
6-21	M	1430	64	23	200	35	7.9	0	121	24	24	1.5	17	14	6,000	910
8-10	T	0735	138*	23*	380*	200*	9.0*	27*	273*	44*	78*	2.2*	25*	44*	41,000*	24,000,000*
8-25	W	1045	38	25	360	45	7.2	0	85	54	25	4.0	48	-	-	93,000
9-15	W	1545	29	22	460	15	8.2	0	285	54	74	0.0	0	96	19,000	91,000
9-27	M	1530	16**	22**	-	-	9.1**	102**	480**	64**	133**	0.0**	0**	450**	49,000**	4,300**
10-29	F	0542	49	14	-	-	8.8	30	242	68	45	0.6	6	60	20,000	-
Average			52	21	340	40	7.2 to 9.1	6	182	51	45	1.6	18	56	19,000	57,000

Excluded from average - indeterminate.

* Not included in average because of unseasonable flow.

** Excluded from average because of slug effect of waste.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 26 -- Located on Reedy Fork 3.2 miles below Station 25 also on Reedy Fork. Drainage Area (sq. mi.) 252

Date Collected	Day	Time	Discharge cfs	Temp. °C	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chromium		Chloride ppm	D. O. % Sat. ppm	5 Day B.O.D. ppm
								Hexavalent ppm	ride ppm			
1954												
6-11	F	0820	200*	23*	8.5*	3*	50*	-	29*	0.0*	0*	38*
6-21	M	1330	64	23	7.4	0	20	0	18	-	-	5.9
6-23	W	1110	53	22	7.2	0	50	-	34	0.0	0	12
7-6	T	1400	30	28	8.6	14	50	-	94	0.0	0	44
7-15	Th	1030	23	27	8.6	13	50	-	75	0.0	0	60
8-10	T	0605	140*	25*	8.3*	0*	46*	-	69*	0.0*	0*	42*
8-25	W	1600	38	26(est)	7.1	0	54	-	86	1.8	22	-
9-15	W	1745	29	23	8.8	56	60	-	93	0.0	0	78
Average			40	25	7.1 to 8.8	14	47	0	67	0.0	0	40

Date Collected	Day	Time	Coliform M.P.N. per 100 ml.	Formaldehyde ppm	Turbidity ppm
1954					
6-11	F	0820	24,000*	-	-
6-21	M	1330	360	0	-
6-23	W	1110	730	-	-
7-6	T	1400	2,300	-	-
7-15	Th	1030	1,500	-	-
8-10	T	0605	93,000*	-	-
8-25	W	1600	93,000	-	-
9-15	W	1745	91,000	-	-
Average			31,000		

* Not included in average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 27 - Located on Reedy Fork a short distance below Burlington Mills Dam and pollution from Ossipee and 0.9 of a mile above Haw River. Drainage Area (sq. mi.) 254

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm	lbs/day	Coliform M.P.N. per 100 mL
														20°C	25°C	
1954																
6-10	Th	1155	200*	23*	780*	450*	8.3	0*	183*	72*	49*	3.5*	40*	30*	41,000*	93,000*
6-21	M	1345	58	25	280	55	7.4	0	101	24	21	4.3	51	9.5	3,700	910
6-23	W	0955	53	21	180	35	7.4	0	113	48	24	3.2	36	8.1	2,900	3,600
6-28	M	1600	28	27	260	45	8.2	0	230	50	27	0.0	0	44	8,300	9,300
7-15	Th	1105	23	27	340	55	8.7	19	309	50	79	0.0	0	28	4,300	24,000
8-10	T	0645	22	23	280	200	7.7	0	244	44	70	0.0	0	39	5,800	93,000
8-25	W	1215	6.5*	26*	180*	220*	7.2*	0*	85*	60*	89*	5.2*	63*	-	-	43,000*
9-15	W	1815	19	22	400	20	8.9	42	345	70	94	0.0	0	100	13,000	93,000
Average			34	24	300	70	7.2 to 8.9	10	224	48	53	1.3	15	38	6,300	37,000

* Not included in average because of unseasonable flow.

SPECIAL ANALYSES

Date	Collected
4-29-55	.03 ppm Cyanide
6-27-55	3.4 ppm Fluoride

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 28 - Located on Haw River 1.2 miles below pollution in Reedy Fork and 2.1 miles below Station 8 also on Haw River. Drainage Area (sq. mi.) 450

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-11	F	0900	500*	22*	3,400*	1,200*	7.2*	0*	35*	32*	6*	6.8*	77*	7.2*	24,000*	43,000*
6-17	Th	1335	91	23	380	80	7.2	0	87	38	20	4.0	46	8.8	5,400	4,300
6-21	M	1415	126	26	300	50	7.2	0	58	20	16	5.6	68	5.1	4,300	1,500
6-28	M	1635	91	26	90	20	7.2	0	100	40	20	1.6	20	13	8,000	910
7-15	Th	1120	39	28	260	25	8.2	0	255	46	73	0.0	0	35	9,200	24,000
8-10	T	0720	39	23	220	450	7.4	0	150	38	52	0.0	0	13	3,400	43,000
8-25	W	1115	45	26	260	100	7.2	0	70	52	64	5.5	67	-	-	3,600
9-15	W	1845	26	25	320	20	8.7	40	341	70	92	0.0	0	100	18,000	15,000
Average			65	25	260	110	7.2 to 8.7	0	152	43	48	2.4	29	29	8,100	13,000

* Not included in average because of unseasonable flow.

Station 29 - Located on Travis Creek above point of effluent discharge from Gibsonville's North sewage and industrial waste treatment plant.

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-11	F	0935	0.2	20	280	140	6.8	0	60	90	9	7.4	80	2.2	3	7,300
6-17	Th	1145	.2	24	360	90	7.0	0	52	54	12	7.0	82	1.5	2	910
6-21	M	1530	.1	19	360	60	7.6	0	121	40	13	4.2	45	>5.8#	>4#	43,000
6-28	M	1520	.02	27	55	9	6.9	0	85	80	12	5.5	68	1.1	1	2,400
7-2	F	0700	.04	21	46	7	7.1	0	82	100	32	5.0	56	1.4	1	2,400
7-15	Th	1210	.03	24	19	10	7.1	0	78	174	134	7.2	85	1.0	1	910
8-12	Th	0615	.03	11	580	400	7.3	0	84	126	42	4.6	42	0.8	1	4,300
9-21	T	1405	.01	22	90	20	7.6	0	85	80	25	3.0	34	2.3	1	150,000
Average			.08	21	220	90	6.8 to 7.6	0	81	93	35	5.5	62	1.5	1	26,000

Excluded from average - indeterminate.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 30 - Located on Travis Creek below point of effluent discharge from Gibsonville's North sewage and industrial waste treatment plant. Drainage Area (sq. mi.) 1.82

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-11	F	0920	0.4	21	320	160	7.1	57	101	12	3.5	39	-	-	430,000
6-17	Th	1212	.5	21	360	60	6.9	55	54	13	3.0	33	6.0	20	43,000
6-21	M	1645	.3	21	320	40	7.1	115	58	19	1.9	21	12	24	150,000
6-28	M	1540	.07	22	65	15	7.4	132	80	25	2.4	27	7.4	3	24,000
7-2	F	0710	.06	25	260	20	7.2	147	100	50	1.0	12	>28#	>11#	2,400,000
7-8	Th	1000	.03	22	260	120	7.4	177	80	36	1.8	20	11	2	430,000
7-15	Th	1220	.07	27	210	70	7.3	175	76	32	0.0	0.0	70	33	9,300,000
8-12	Th	0625	.001	12	320	300	7.3	188	80	43	0.0	0.0	35	1	24,000,000
9-21	T	1410	.001	23	980	15	8.0	264	70	65	0.0	0.0	110	1	93,000,000
Average			0.2	22	340	90	6.9 to 8.0	146	78	33	1.5	17	36	12	14,000,000

Excluded from average - indeterminate.

Station 31 - Located on Travis Creek 1.0 mile below Station 29 also on Travis Creek.	Drainage Area (sq. mi.)	4.70
6-30 W 1010	5.7	62
7-8 Th 1010	1.1	13
7-15 Th 1240	6.3	78
8-12 Th 0645	4.3	43
9-21 T 1615	2.3	26
Average	3.9	44

#Not included in average - indeterminate.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 32 - Located on Travis Creek 1.8 miles below Station 31 also on Travis Creek and 0.3 of a mile above Haw River. Drainage Area (sq. mi.) 16.1

Date Col-lected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
6-30	W	1030	0.4	21	65	15	7.3	0	60	54	13	8.2	91	1.5	4	<360#
7-8	Th	1025	.01	24	42	25	7.6	0	63	56	12	7.7	91	3.8	1	4,300
7-15	Th	1250	0	Intermittent pools - no sample collected.				Zero flow omitted from average.								
8-12	Th	0700	.01	16	260	180	6.9	0	47	20	10	5.0	50	1.1	1	3,000
9-21	T	1600	0	No water to sample.				Zero flow omitted from average.								
Average			.08	20	120	75	6.9 to 7.6	0	57	43	12	7.0	77	2.1	2	3,700

Not included in average - indeterminate.

Station 33 - Located on Haw River above untreated sewage and industrial waste from Copland Mills in Hopedale 6 miles below Station 28 also on Haw River and 5.2 miles below pollution in Travis Creek.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-25	F	0930	68	25	130	35	7.4	0	74	42	19	6.0	71	-	-	91
7-14	W	0710	26	27	70	20	7.4	0	121	50	44	2.9	36	5.6	980	<36#
7-22	Th	1030	171*	26*	120*	120*	7.4*	0*	89*	48*	55*	3.2*	39*	7.8*	9,000*	1,500*
8-12	Th	1130	51	25	220	110	8.3	0	267	70	66	2.6	31	20	6,900	2,100
8-25	W	1415	49	29	260	30	7.3	0	113	30	26	3.8	49	5.0	1,700	9,300
9-27	M	1730	4.8	25	180	20	7.5	0	405	58	98	7.4	88	24	780	93,000
Average			40	26	170	45	7.3 to 8.3	0	196	50	51	4.5	55	14	2,600	26,000

Excluded from average - indeterminate.

* Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 33A (Old W6-1) - Located on Stony Creek (Burlington Lake) at Burlington's intake. Drainage Area (sq. mi.)

Date Collected 1954	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	ppm lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-16	M 1145	29	80	20	7.8	0	32	38	5.2	2.2	67	73
8-26	Th 1400	22	400	100	6.7	0	46	42	6.0	1.6	68	43
9-17	F 0750	27	230	30	6.9	0	43	40	5.5	2.3	68	230
10-14	Th 1400	22	-	-	7.5	0	42	40	7.9	4.1	90	<36#
Average		25	240	50	6.7 to 7.8	0	41	40	6.2	2.6	73	120

Excluded from average - indeterminate.

Station 33A-1 (Old W6-2) - Located on Burlington Lake's discharge line at Burlington's raw water reservoir. Drainage Area (sq. mi.)

8-16	M 1945	29	70	7	7.2	0	35	38	3.7	47	2.0	36
8-26	Th 1700	27	55	-	7.1	0	36	42	5.3	65	1.6	43
9-17	F 1230	21	160	35	7.0	0	27	40	5.5	61	2.8	36
Average		26	95		7.0 to 7.2	0	33	40	4.8	58	2.1	38

Station 33B (Old W7) - Located at reservoir on Stony Creek supplying water to Hopedale and Copland Fabrics. Drainage Area (sq. mi.)

8-16	M 1700	29	120	20	7.6	0	35	42	7.5	96	1.9	150
8-26	Th 1520	31	65	10	7.3	0	40	44	7.2	96	2.3	43
9-17	F 1000	26	320	70	7.2	0	36	40	8.2	100	5.0	91
Average		29	170	35	7.2 to 7.6	0	37	42	7.6	97	3.1	95

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 34 ~ Located on Haw River 0.7 of a mile below untreated sewage and industrial waste from Copland Mills in Hopedale and above Burlington's untreated sewage and industrial waste. Drainage Area (sq. mi.) 582

Date Collected 1954	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium Hexavalent ppm	Chloride ppm	D. O. %		5 Day B.O.D. ppm	
							Phenol, ppm	Total, ppm				ppm	Sat. 20°C	20°C	25°C
6-25	F 0700	70	26	130	25	7.3	0	74	60	0	16	7.0	85	-	-
7-14	W 0930	30	28	80	20	7.3	0	98	50	-	44	6.5	82	7.6	1,500
7-22	Th 1000	166*	26*	120*	80*	7.4*	0*	74*	42*	-	46*	4.4*	54*	8.4*	9,400*
8-12	Th 1205	52	25	240	250	8.0	0	257	54	-	67	4.9	58	17	6,000
8-25	W 1400	48	29	210	40	7.2	0	131	40	0	29	3.7	47	8.4	2,700
9-27	M 1800	5	24	-	-	7.9	0	387	20	-	95	-	-	20	680
Average		41	26	170	85	7.2 to 8.0	0	189	45		50	5.5	68	13	2,700

Date Collected 1954	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
6-25	F	0700	1,500	-	0	0
7-14	W	0930	230	-	0	0
7-22	Th	1000	1,500*	-	0*	0*
8-12	Th	1205	730	.05	0	0
8-25	W	1400	9,300	<.05	0	0
9-27	M	1800	93,000	-	-	-
Average			21,000	<.05	0	0

* Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 35 - Located on Haw River 2.3 miles below Burlington's untreated sewage and industrial waste and above Haw River's untreated sewage and industrial waste. Drainage Area (sq. mi.) 599

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium Hexavalent		Chloride ppm	Dissolved Oxygen		5 Day B.O.D. ppm 20°C	lbs/day 25°C
						ppm	ppm		ppm	ppm		ppm	ppm		ppm	% Sat.		
1954																		
6-25	F	1000	101	26	140	20	20	7.2	0	65	58	0	0	35	2.3	28	-	-
7-14	W	0745	63	26	100	20	20	7.5	0	107	48	-	-	62	0.5	6	9.2	3,900
7-22	Th	1100	192*	26*	130*	15*	15*	7.3*	0*	82*	42*	-	-	33*	2.6*	32*	7.1*	9,200*
8-12	Th	1230	89	25 Est.	-	-	-	7.4	0	149	68	-	-	69	5.8	69	12	7,200
8-25	W	1440	77	29	160	20	20	7.5	0	161	42	0	0	41	2.3	29	8.1	4,200
9-27	M	1700	14	26	180	7	7	7.5	0	309	78	-	-	85	-	-	15	1,400
Average			69	26	150	15	15	7.2 to 7.5	0	158	59	0	0	58	2.7	33	11	4,200

Date Collected	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
1954						
6-25	F	1000	1,500,000	-	0	0
7-14	W	0745	430,000	-	0	0
7-22	Th	1100	2,400,000*	-	0	0
8-12	Th	1230	430,000	-	0	0
8-25	W	1440	9,300,000	-	-	-
9-27	M	1700	430,000,000	<.05	0	0
Average			88,000,000	0	0	0

* Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 36 -- Located on Haw River 2.0 miles below Haw River's untreated sewage and industrial waste. Drainage Area (sq. mi.) 607

Date Collected	Day	Time	Discharge cfs.	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium		Chloride ppm	D. O.		5 Day B.O.D. ppm	lbs/day
								Phenol. ppm	Total ppm		Hexavalent ppm			% Sat.	20°C		
1954																	
6-30	W	1145	56	26	70	10	7.1	0	123	52	--		50	1.3	16	15	5,700
7-8	Th	1400	42	29	100	15	7.8	0	185	52	0		70	5.6	72	6.4	1,800
7-14	W	0810	47	28	100	25	7.4	0	140	54	.15		58	0.7	9	12	3,800
7-22	Th	1130	160*	27*	180*	35*	7.4*	0*	102*	46*	--		61*	0.8*	10*	14*	15,000*
8-12	Th	0900	91	25	140	90	7.3	0	105	66	.1		74	1.3	15	14	8,600
8-25	W	1500	91	29	180	50	7.4	0	174	42	--		54	0.0	0	21	13,000
9-27	M	1615	14	23	220	7	7.4	0	283	78	0		109	0.7	8	20	1,900
Average			57	27	140	35	7.1 to 7.8	0	168	57	<.10		69	1.6	20	15	5,800

Date Collected	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
1954						
6-30	W	1145	4,600,000	--	0	--
7-8	Th	1400	93,000	--	0	0
7-14	W	0810	430,000	--	0	0
7-22	Th	1130	9,300,000*	--	0*	0*
8-12	Th	0900	1,500,000	0	0	0
8-25	W	1500	9,300,000	--	--	--
9-27	M	1615	93,000,000	<.05	0	0
Average			18,000,000		0	0

* Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 37 - Located on Haw River 1.3 miles below Station 36 also on Haw River and above Graham's untreated sewage and industrial waste and above Back Creek. Drainage Area (sq. mi.) 608

Date Collected 1954	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium		Chloride ppm	Dissolved Oxygen % Sat.	5 Day B.O.D.	
						ppm	ppm		ppm	ppm		ppm	ppm			ppm 20°C	ppm lbs/day 25°C
6-30	W	1130	56	28	80	10	10	7.4	0	87	58	-	38	2.8	35	8.4	3,200
7-14	W	0830	47	27	160	25	25	7.6	0	174	46	0	67	0.0	0	13	4,100
7-23	F	1020	280*	24*	-	-	-	7.2*	0*	85*	46*	-	52*	3.0*	35*	6.0*	11,000*
9-27	M	1600	14	23	200	6	6	7.2	0	270	76	0	123	0.3	3	11	1,000
9-28	T	1400	18	24	200	10	10	7.3	0	262	72	0	121	0.0	0	-	-
10-4	M	1000	17	24	260	7	7	7.4	0	363	80	0	297	0.0	0	41	4,700
Average			30	25	180	10	10	7.2 to 7.6	0	231	66	0	130	0.6	8	18	3,300

Date Collected 1954	Day	Time	Coliform		Cyanide ppm	Sulfide ppm	Formaldehyde ppm
			M.P.N. per 100 ml.				
6-30	W	1130	-	-	-	0	-
7-14	W	0830	240,000	-	-	0	0
7-23	F	1020	110,000,000#	-	-	0	-
9-27	M	1600	43,000*	-	-	0	-
9-28	T	1400	240,000,000	-	-	0	0
10-4	M	1000	24,000,000	.05	-	0	0
Average			9,300,000	-	-	4.0	0
			68,000,000	-	-	0.0	0

Excluded from average - indeterminate.

* Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 37A (Old W8) - Located on Mill Creek at Mebane's intake.

Drainage Area (sq. mi.)

Date Collected 1954	Day	Time	Dis. charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. lbs/day 20°C	Coliform M.P.N. per 100 ml.
8-16	M	1730		29	140	20	7.3	0	32	46	7.6	97	5.7	430
8-26	Th	1600		29	85	10	7.4	0	34	40	9.3	119	1.4	15
9-17	F	1120		26	90	25	7.4	0	32	42	6.0	73	1.2	9,300
Average				28	110	20	7.3 to 7.4	0	33	43	7.6	96	2.8	3,200

Station 37B (Old W9) - Located on Back Creek at Graham's intake.

Drainage Area (sq. mi.)

8-16	M	1910		29	170	15	7.2	0	32	38	4.4	56	0.1	36
8-26	Th	1700		27	140	20	6.7	0	34	40	3.1	38	1.7	9
9-17	F	1200		26	210	15	6.7	0	32	42	6.5	79	6.2	230
Average				27	170	15	6.7 to 7.2	0	33	40	4.7	58	2.7	92

Station 38 - Located on Back Creek below Graham's intake and above Moadams Creek which receives the effluent discharge from Mebane's sewage and industrial waste treatment plant.

Drainage Area (sq. mi.) 69.5

6-30	W	1445	.7	25	70	10	7.2	0	32	180	8.7	104	3.3	16	430
7-8	Th	1200	.02	25	80	20	7.2	0	50	42	3.1	37	2.5	1	930
7-23	F	1100	1.1*	26*	210*	55*	7.0*	0	38*	36*	4.8*	59*	2.3*	17*	4,300*
9-28	T	1700	.01	25	60	10	6.5	0	50	10	3.0	36	2.3	1	430
10-4	M	0550	.02	22	43	7	7.1	0	27	20	3.7	42	1.5	1	9,300
Average			.19	24	65	12	6.5 to 7.2	0	40	63	4.6	55	2.4	5	2,800

*Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 39 - Located on Moadams Creek above point of effluent discharge from Mebane's sewage and industrial waste treatment plant. Drainage Area (sq. mi.) 1.07

Date Collected 1954	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Hardness as CaCO ₃ ppm	Hex. ppm	Chloride		Dissolved O ₂ %	5 Day B.O.D.	
							Phenol. ppm	Total ppm			ppm	ppm		ppm 20°C	lbs/day 25°C
6-30	W	1340	0.01	21	420	160	0	32	38	-	7	7.1	79	1.6	1
7-8	Th	1445	0.01	22	420	20	0	46	46	0	9	4.0	45	6.5	1
7-23	F	0945	0.01	24	580	270	0	28	36	-	6	3.9	46	3.4	1
9-28	T	1715	0	No water to sample - zero flow omitted from average.											
10-4	M	0535	0	No water to sample - zero flow omitted from average.											
Average			0.01	22	480	150	6.7 to 0	35	40		7	5.0	57	3.8	1

Date Collected 1954	Day	Time	Coliform M.P.N. per 100 ml.	Sulfide		Formaldehyde	
				ppm	ppm	ppm	ppm
6-30	W	1340	2,400	-	-	0	0
7-8	Th	1445	2,400	0	0	0	0
7-23	F	0945	93,000	-	-	-	-
9-28	T	1715		-	-	-	-
10-4	M	0535		-	-	-	-
Average			33,000			0	0

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 40 -- Located on Moadams Creek below point of discharge of effluent from Mebane's Drainage Area (sq. mi.) 1.22 sewage and industrial waste treatment plant.

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	25°C
1954															
6-30	W	1420	0.27	27	660	180	7.2	0	54	0	304	0.0	91	65	120
7-8	Th	1600	.34	24	460	160	7.4	0	-	0	41	0.0	0	210	480
7-23	F	0955	.58	23	440	230	7.1	0	44	0	66	0.0	0	140	550
9-28	T	1130	.45	28	1,020	140	7.4	0	74	0	313	0.0	0	-	-
10-4	M	0540	.21	26	1,080	200	7.1	0	62	0	33	0.0	0	170	240
Average			0.4	26	740	180	7.1 to 7.4	0	59	0	151	0.0	0	150	350

Date Col- lected	Day	Time	Coliform M.P.N. per 100 ml.	Sulfide ppm	Formaldehyde ppm
1954					
6-30	W	1420	4,600,000	-	0
7-8	Th	1600	4,300,000	0	0
7-23	F	0955	-	-	0
9-28	T	1130	150,000,000	-	0
10-4	M	0540	43,000,000	-	0
Average			50,000,000		0

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 41 - Located on Moadams Creek 1.4 miles below Station 40 also on this creek. Drainage Area (sq. mi.) 3.38

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
6-30	W	1550	0.04	26	210	60	7.7	0	68	44	38	0.8	10	11	3	<360#
7-8	Th	1620	.04	-	280	100	7.8	0	89	48	41	4.2	-	15	4	15,000
7-23	F	0925	.51	24	440	120	7.3	0	82	44	42	1.2	14	-	-	1,500,000
9-28	T	1200	0	No water to sample	No water to sample	-	zero flow	omitted from average.								
10-4	M	0610	0	No water to sample	No water to sample	-	zero flow	omitted from average.								
Average			.20	25	320	95	7.3 to 7.8	0	80	45	40	2.1	12	13	4	760,000

Date Collected 1954	Day	Time	Sulfide ppm	Formaldehyde ppm
6-30	W	1550		
7-8	Th	1620		
7-23	F	0925	0	0
9-28	T	1200		
10-4	M	0610		
Average				

#Excluded from average - indeterminate

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 42 -- Located on Back Creek 4.5 miles below mouth of Moadam's Creek and 0.3 mile above Haw River. Drainage Area (sq. mi.) 83.0

Date Collected 1954	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20° C	lbs/day 25° C
								Phenol. ppm	Total ppm				% Sat.	ppm		
7-1	Th	1610	1.6	-	90	20	7.2	0	44	44	-	5	7.8	-	2.5	27
7-7	W	0745	.9	24	160	45	7.1	0	42	50	-	4	4.1	48	1.6	10
7-8	Th	1300	1	25	80	20	7.2	0	46	44	-	9	4.4	52	2.8	19
7-22	Th	1400	10*	26*	-	-	7.2*	0*	45*	46*	-	12*	4.8*	59*	1.6*	110*
8-12	Th	0832	.4	22	210	550	7.0	0	48	52	-	18	4.8	55	5.3	14
8-25	W	1540	.4	25	160	30	7.4	0	58	42	0	9	1.6	19	3.8	10
9-28	T	1230	.01	24	70	6	6.8	0	112	30	0	38	1.5	18	-	-
10-4	M	0620	.01	22	49	6	7.0	0	32	72	0	47	2.7	31	2.6	1
Average			.6	24	120	95	6.8 to 7.4	0	55	48	0	19	3.8	37	3.1	14

Date Collected 1954	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
7-1	Th	1610	910	-	0	0
7-7	W	0745	2,300	-	0	0
7-8	Th	1300	9,100	-	0	0
7-22	Th	1400	9,100*	-	-	-
8-12	Th	0832	24,000	-	0	0
8-25	W	1540	230	0	0	0
9-28	T	1230	73,000	-	-	0
10-4	M	0620	1,500	-	0	0
Average			16,000	0	0	0

*Excluded from average because of unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 43 - Located on Haw River below dam of Virginia Mills, Inc., at Swepsonville and above the untreated sewage and industrial waste from these mills. Drainage Area (sq. mi.) 697

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. % Sat. ppm	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C
1954															
8-2	M	1215	265	25	65	20	6.8	0	27	64	-	52	5.3	8.8	16,000
8-11	W	1430	210	26	120	110	7.0	0	42	52	-	42	9.8	9.0	13,000
8-17	T	1010	235	27	110	15	9.4	22	192	48	-	71	11.9	7.0	11,000
8-19	Th	0900	302	24	65	10	7.5	0	183	50	-	65	6.0	15	31,000
8-23	M	1800	285	26	90	10	7.5	0	250	50	0	58	0.8	9.0	17,000
9-3	F	0600	256	18	680	80	7.0	0	67	36	0	32	0.1	6.2	11,000
9-7	T	1615	226	21	180	30	7.3	0	65	44	0	52	1.5	7.4	11,000
Average			254	24	190	40	6.8 to 9.4	0	118	49	0	53	5.1	8.9	16,000

Date Collected	Day	Time	Coliform M.P.C.N. per 100 mL.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
1954						
8-2	M	1215	93,000	-	0	0
8-11	W	1430	240,000	-	0	0
8-17	T	1010	93,000	0	0	0
8-19	Th	0900	930,000	0	0	0
8-23	M	1800	430,000	-	0	0
9-3	F	0600	93,000	-	0	0
9-7	T	1615	9,300,000	-	0	0
Average			1,600,000	0	0	0

NOTE: Stream regulated at this station for power purposes; therefore, pounds of B.O.D. per day is simply a rate as water flowed for only a matter of hours some days.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 44 - Located on Haw River below untreated sewage and industrial waste from Virginia Mills, Inc., and 0.1 of a mile above Alamance Creek. Drainage Area (sq. mi.) 698

Date Collected 1954	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chromium		Chloride ppm	Dissolved O ₂ % Sat.	5 Day B.O.D. ppm	lbs/day
											Hexavalent ppm	valent ppm				
8-2	M	1435	260	25	140	65	6.8	0	27	64			51	6.5	7.6	13,000
8-11	W	1205	210	26	200	70	7.4	0	49	52			39	6.1	7.0	9,900
8-17	T	1105	240	27	110	15	9.2	16	185	52			80	6.2	9.4	15,000
8-19	Th	0955	300	26	140	10	8.0	0	190	44			68	6.1	12	24,000
8-23	M	1915	280	26	110	10	7.4	0	208	50			61	0.4	-	-
9-3	F	0635	260	19	920	75	7.1	0	68	38	0		33	0.0	6.8	12,000
9-7	T	1625	230	22	180	10	9.1	10	50	44			52	12.1	23	36,000
Average			254	24	260	35	6.8 to 9.2	0	111	49			55	5.3	11	18,000

NOTE: Stream regulated at this station for power purposes; therefore, pounds of B.O.D. per day is simply a rate as water flowed for only a matter of hours some days.

Date Collected 1954	Day	Time	Coliform M.P.N. per 100 ml.	Sulfide ppm	Formaldehyde ppm
8-2	M	1435	43,000		
8-11	W	1205	150,000		
8-17	T	1105	23,000		
8-19	Th	0955	93,000		
8-23	M	1915	430,000		
9-3	F	0635	43,000	0	0
9-7	T	1625	430,000		
Average			170,000		

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 45 - Located on Gun Creek below treated sewage from Elon College and Town after construction of new complete sewage treatment plant.

Drainage Area (sq. mi.) 3.68

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 mL
								Phenol ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
7-28	W	0930	.01	25	420	320	6.8	0	47	54	16	8.5	101	2.3	1	2,100
8-13	F	0600	.1	16	540	500	7.1	0	52	62	20	5.6	56	6.2	4	<360
9-1	W	1010	0*	26*	320*	50*	7.3*	0*	54*	64*	15*	10.5*	128*	0.6*	-	21,000*
10-5	T	1600	0*	25*	120*	25*	7.0*	0*	70*	64*	25*	7.6*	91*	2.3*	-	9,300*
10-13	W	1430	0*	20*	140*	25*	7.3*	0*	111*	68*	23*	9.0*	98*	3.4*	-	9,300*
Average																

* These analyses represent water from pools with no overflow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 3.44

Station 46 - Located on Little Creek above point of effluent discharge from Gibsonville's sewage and industrial waste treatment plant.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium		Chloride ppm	Dissolved Oxygen		5 Day B.O.D. ppm 20°C	lbs/day 25°C
						ppm	ppm	ppm	ppm	ppm		ppm	ppm		ppm	% Sat.		
7-1	Th	1050	0.1	-	33	7	7.4	0	40	58	-	-	7	7.7	-	-	1.4	1
7-7	W	1145	0	*	*33	*15	*7.4	*0	*45	*62	-	-	*12	*7.2	-	-	*4.9	-
7-28	W	0900	0.02	25	46	40	6.8	0	41	56	-	-	8	8.4	100	-	1.1	1
8-13	F	0625	0	*16	*46	*60	*7.4	*0	*45	*60	-	*0	*8	*7.8	*78	-	*0.1	-
9-1	W	0930	0	No water to sample.														
10-5	T	-	0	No water to sample.														
10-13	W	1340	0	No water to sample.														

Date Collected	Day	Time	Coliform M.P.N. per 100 ml.	Sulfide ppm	Formaldehyde ppm
7-1	Th	1050	<360	-	-
7-7	W	1145	*4,300	*0	-
7-28	W	0900	2,300	0	0
8-13	F	0625	*910	*0	*0
9-1	W	0930			
10-5	T	-			
10-13	W	1340			

* These analyses represent water from pools with no overflow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 47 - Located on Cedar Creek below point of discharge from Gibsonville's South sewage and industrial waste treatment plant prior to removal of dye waste from influent to treatment plant.

Drainage Area (sq. mi.) 1.74

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chromium	
								Phenol ppm	Total ppm	Mineral ppm	Total ppm		Hexavalent ppm	Chloride ppm
7-1-54	Th	1040	.32	-	70	10	3.3	-	-	-	-	-	-	-
7-7-54	W	1140	.16	Broke	260	50	7.4	0	167	-	-	70	-	199
7-28-54	W	0910	.05*	25*	580*	300*	7.1*	0*	165*	-	-	86*	0*	403*
8-13-54	F	0630	.23	17	440	270	4.9	0	20	-	-	180	-	1,003
9-1-54	W	0940	.64	21	520	55	6.8	0	49	-	-	64	0	1,194
10-5-54	T	1615	.78	26	840	140	3.8	-	-	114	194	108	-	365
10-13-54	W	1340	.93	20	34	650	4.3	-	-	0	82	270	0	590
Average			.51	21	360	200	3.3 to 7.4	0	79	-	-	138	0	670

Date Collected	Day	Time	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.	Sulfide ppm	Formaldehyde ppm
			ppm	% Sat.	ppm	lbs/day			
7-1-54	Th	1040	2.0	-	>22#	>48#	<360#	-	-
7-7-54	W	1140	0.0	0	72	78	24,000,000	0	-
7-28-54	W	0910	4.7*	56*	9.0*	3*	430,000*	0*	0*
8-13-54	F	0630	4.6	47	88	140	1,500,000	0	0
9-1-54	W	0940	2.6	29	80	350	93,000,000	0	0
10-5-54	T	1615	0.0	0	130	680	240,000	0	-
10-13-54	W	1340	1.7	18	78	490	360	0	<.05
Average			1.8	19	90	350	24,000,000	0	<.05

Excluded from average, indeterminate.

* Not included in average, industrial waste not flowing.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 48 - Located on Little Creek 0.5 of a mile below Station 47 on Cedar Creek.

Drainage Area (sq. mi.) 5.18

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Acidity Mineral ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium	
								Phenol ppm	Total ppm				Hexavalent ppm	Chloride ppm
7-1	Th	1020	0.4	-	55	20	3.7	0	0	-	-	-	0	-
7-7	W	1135	.2	-	320	50	7.5	0	131	-	-	70	-	236
7-28	W	1137	.03*	25*	260*	100*	7.0*	0*	117*	-	-	74*	0*	373*
8-13	F	0750	.2	17	500	250	5.5	0	24	-	-	130	-	858
9-1	W	0950	.6	21	560	100	6.8	0	54	-	-	64	0	1,156
10-5	T	1640	.7	26	840	55	3.9	-	-	-	186	106	0	352
10-13	W	1300	.9	21	180	34	3.5	-	-	103	126	254	0	582
Average			.5	21	400	85	3.5 to 7.5	0	52	47		125	0	640

Date Collected	Day	Time	D.O. %	5 Day B.O.D.		Coliform M.P.N. per 100 ml.	Sulfide ppm	Formaldehyde ppm
				ppm 20°C	lbs/day 25°C			
7-1	Th	1020	1.5	>21#	>57#	2,300	0	0
7-7	W	1135	0.6	27	36	29,000	0	0
7-28	W	1137	5.1*	6.4*	1*	15,000*	0*	0*
8-13	F	0750	2.4	74	100	2,400,000	0	0
9-1	W	0950	1.2	56	230	1,500,000	0	0
10-5	T	1640	0.0	110	520	>11,000,000#	0	<.05
10-13	W	1300	0.6	42	260	360	-	<.05
Average			1.1	62	230	790,000	0	<.05

Excluded from average, indeterminate.

* Not included in average, industrial waste not flowing.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 49 -- Located on Little Creek 2.5 miles below Station 48 also on this creek and 2.1 miles above Alamance water supply on Alamance Creek.

Drainage Area (sq. mi.) 10.7

Date Collected 1954	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-1	Th	1245	0.6	-	60	15	7.3	0	40	418	9.6	-	1.5	6	<360#
7-7	W	1000	.4	24	160	50	7.3	0	32	61*	8.0	94	2.0	5	12,000
7-28	W	0945	.1*	25*	180*	230*	6.5*	0*	31*	512*	6.0*	72*	0.6*	1*	<360#
8-13	F	0800	.06	18	70	35	6.9	0	37	202	7.8	81	0.8	1	2,400
9-1	W	1040	.5	22	24	3	6.6	0	6	580	7.2	82	1.3	4	7,300
10-5	T	1700	.01	26	140	7	6.7	0	32	507	3.0	37	3.1	1	9,300
10-13	W	1400	.02	19	100	20	7.5	0	19	477	4.4	47	0.6	1	4,300
Average			.27	22	90	20	6.5 to 7.5	0	28	440	6.7	68	1.6	3	7,100

Excluded from average, indeterminate.

* Not included in average, industrial waste not flowing.

Note: On 9/1/54 records show that sulfide and formaldehyde were zero.

Station 50 -- Located on Alamance Creek at Bellemont 6.6 miles below Station 49 on Little Creek and 4.5 miles below untreated domestic sewage from Chester H. Ross Men's Hosiery and Knitting Mill.

Drainage Area (sq. mi.) 157

7-1	Th	1300	7	-	140	35	7.3	0	42	19	6.2	-	1.7	80	730
7-7	W	0930	12	24	130	50	7.3	0	32	56	7.2	85	1.7	140	910
7-28	W	1015	4.5	25	680	320	6.6	0	26	14	5.7	68	1.2	36	9,300
8-13	F	0900	6	21	320	160	7.4	0	40	10	7.2	80	1.0	41	4,300
9-1	W	1055	5.5	22	130	320	7.0	0	29	19	5.6	64	2.5	93	21,000
10-5	T	1735	.5	24	55	7	7.0	0	34	34	3.4	40	4.3	15	24,000
10-13	W	1500	.1	19	130	20	7.0	0	71	280	1.9	20	2.6	2	15,000
Average			5.1	23	230	130	6.6 to 7.4	0	39	62	5.3	60	2.1	58	11,000

Note: On 9/1/54 records show that sulfide and formaldehyde were zero.

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 50A (Old B3) -- Located at Kimesville Lake bathing area.

Drainage Area (sq. mi.)

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
8-26	Th	1000		28	140	15	7.0	0	20	38	1	6.6	83	3.4		-

Station 51 -- Located on Alamance Creek 2.4 miles below Station 50 also on this creek and 1.6 miles above Little Alamance Creek which receives effluent from Burlington's Little Alamance Creek sewage and industrial waste treatment plant.

Drainage Area (sq. mi.) 247

7-1	Th	1435	14	-	70	20	7.4	0	43	48	13	8.0	-	1.7	160	91
7-6	T	1250	11	25	120	35	7.4	0	35	46	21	7.8	93	1.0	74	91
7-7	W	0830	10	24	90	55	7.3	0	32	54	20	7.6	89	1.3	88	930
8-11	W	1020	11	23	320	180	7.2	0	31	48	6	7.7	89	1.8	134	430
8-17	T	0900	3.3	24	130	15	8.0	0	56	42	11	8.3	98	0.5	11	2,400
8-19	Th	0645	5.5	24	120	10	7.1	0	40	40	10	7.0	82	1.8	67	730
8-23	M	2130	1.2	24	60	10	7.2	0	42	48	33	7.2	85	1.3	11	1,500
9-7	T	1800	.8	25	180	25	7.3	0	36	50	39	6.8	81	2.2	12	910
Average			7.1	24	140	45	7.1 to 8.0	0	39	47	19	7.6	88	1.5	70	890

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 52 - Located on Little Alamance Creek above point of discharge of effluent from Burlington's Little Alamance Creek sewage and industrial waste treatment plant.

Drainage Area (sq. mi.) 13.2

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954															
7-6	T	1215	0.1	25	90	30	7.2	65	90	22	7.0	83	2.6	2	2,400
7-7	W	0910	.2	23	90	50	7.3	32	104	26	4.4	51	1.4	2	2,300
8-11	W	1005	.5	23	100	100	7.1	50	90	38	6.4	74	3.2	11	4,300
8-17	T	0830	1.4	25	130	15	7.8	45	52	11	6.3	75	1.7	16	24,000
8-19	Th	0635	4.4*	23*	1,120*	350*	7.1*	41*	66*	16*	7.8*	90*	3.7*	110*	<360#
8-23	M	2200	.1	24	70	30	7.3	51	64	14	5.6	66	1.0	1	930
9-7	T	1830	.5	22	70	10	7.5	63	72	16	6.7	76	2.5	8	430
Average			0.5	24	90	40	7.1 to 7.8	51	79	21	6.1	71	2.1	7	5,700

* Excluded from average, unseasonable flow.

Excluded from average, indeterminate.

Station 53 - Located on Little Alamance Creek below point of effluent discharge from Burlington's Little Alamance Creek sewage and industrial waste treatment plant and 1.8 miles above Alamance Creek.

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-1	Th	1500	3.0	-	160	40	7.4	44	-	56	7.0	-	24	490	<360#
7-7	W	0840	0.3	23	200	120	7.3	43	82	43	6.6	76	10	20	<36#
8-11	W	1030	1.8	23	140	140	7.1	90	74	43	7.4	85	14	170	<360#
8-17	T	0845	2.7	25	680	220	7.9	67	64	21	7.6	90	6.8	120	36
8-19	Th	0655	6*	24*	620*	200*	6.9*	46*	60*	23*	7.6*	89*	2.6*	110*	73*
8-23	M	2100	2.7	25	28	50	7.3	130	64	49	6.2	74	11	200	910
9-7	T	1735	1.8	24	260	30	7.4	145	70	59	5.2	61	48	580	15,000
Average			2.1	24	250	100	6.9 to 7.9	87	71	45	6.7	77	19	260	5,300

* Excluded from average, unseasonable flow.

Excluded from average, indeterminate.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 54 - Located on Alamance Creek 3.7 miles below Station 53 on Little Alamance Creek and 0.1 mile above Haw River. Drainage Area (sq. mi.) 267

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954															
7-6	T	1430	12	25	90	50	7.1	0	48	25	6.0	71	6.8	550	910
8-2	M	1330	20*	25*	1,860*	1,000*	7.1*	0*	32*	7*	6.6*	79*	2.8*	380*	240,000*
8-11	W	1135	13	25	320	210	7.1	0	50	13	3.7	44	2.6	230	730
8-17	T	1040	7	25	-	-	7.8	0	64	25	1.4	17	3.4	160	2,400
8-19	Th	1005	12	24	90	15	6.8	0	54	18	1.3	15	8.7	700	9,300
8-23	M	1900	5	26	170	20	7.1	0	52	20	3.0	37	3.8	130	360
9-3	F	0615	4	19	400	75	7.0	0	54	13	0.5	5	3.3	89	43,000
9-7	T	1630	3	23	210	20	7.5	0	62	27	5.1	59	9.0	180	24,000
Average			8	24	210	65	6.8 to 7.8	0	55	20	3.0	35	5.4	290	12,000

* Excluded from average, unseasonable flow.

Station 55 - Located on Haw River at lower dam of Virginia Mills, Inc., 0.7 of a mile below Station 44 on Haw River and 0.7 of a mile below Station 54 on Alamance Creek. Drainage Area (sq. mi.) 965

8-2	M	1500	280	25	340	240	6.8	0	58	43	5.5	66	8.2	15,000	24,000
8-11	W	1340	230	29	160	140	7.1	0	50	37	13.1	168	14	21,000	73,000
8-17	T	1125	250	29	180	6	9.6	21	60	58	4.4	56	11	18,000	9,300
8-19	Th	1050	320	25 (est)	140	15	7.4	0	46	55	2.0	24	5.9	13,000	43,000
8-23	M	1900	290	26	140	7	7.3	0	50	61	0.0	0	6.6	13,000	240,000
9-3	F	0615	260	22	560	80	7.1	0	44	24	0.0	0	5.7	10,000	73,000
9-7	T	1700	240	24	120	10	7.5	0	54	46	4.8	56	7.4	12,000	23,000
Average			267	26	230	70	6.8 to 9.6	0	52	46	4.3	53	8.4	15,000	69,000

Note: Stream regulated at this station for power purposes; therefore, pounds of B.O.D. per day is simply a rate as water flowed for only a matter of hours some days.

TABLE 7
ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 56 - Located on Haw River at Saxapahaw 5.4 miles below Station 55 on this river Drainage Area (sq. mi.) 1020
and above point of discharge of untreated sewage and industrial waste from
Seller's Manufacturing Company.

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium				Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D.	
								Phenol. ppm	Total ppm		Hexa- valent ppm	ride ppm	20°C	25°C					
1954																			
7-20	T	1100	165*	28*	480*	200*	7.3*	0*	76*	42*	-	24*	7.0*	89*	5.6*	6,200*			
8-27	F	0630	33	27	110	20	7.3	0	129	54	-	57	1.9	24	6.4	1,400			
9-13	M	1300	27	21	360	35	7.7	0	102	40	-	36	5.9	66	5.3	970			
9-22	W	0815	28	22	160	20	7.2	0	95	60	0	37	5.4	61	13	2,400			
10-2	Th	1630	33	23	420	35	7.2	0	36	80	0	59	6.7	77	9.0	2,000			
Average			30	23	260	30	7.2 to 7.7	0	91	59		47	5.0	57	8.4	1,700			

Date Col- lected	Day	Time	Coliform M.P.N. per 100 mL.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
7-20	T	1100	930*	-	0*	0*
8-27	F	0630	15,000	-	0	0
9-13	M	1300	360	-	-	-
9-22	W	0815	150	<.05	0	0
10-2	Th	1630	24,000	-	0	0
Average			10,000		0	0

* Excluded from average as unseasonable flow due to regulation of
water for power purposes.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 57 - Located on Haw River, below point of discharge of untreated sewage and industrial waste from Seller's Manufacturing Co.

Drainage Area (sq. mi.) 1030

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity			Hardness as CaCO ₃ ppm	Chromium		Chloride ppm	D. O. %
								Phenol. ppm	Total ppm			Hexavalent ppm			
1954															
7-20	T	1200	165*	29*	480*	200*	7.7*	0*	72*		34*	0*		21*	6.6*
8-27	F	0650	33	27	120	15	9.3	45	195		60	0		65	1.0
9-13	M	1410	27	21	210	25	9.4	24	101		38	-		37	16.5
9-22	W	0900	29	21	-	-	8.3	0	122		60	-		41	5.5
10-7	Th	1700	32	23	210	3	8.3	0	79		60	0		66	9.4
Average			30	23	180	15	7.7 to 9.4	17	124		55	0		52	8.1
															91

Date Collected	Day	Time	5 Day B.O.D.		Coliform M.P.N. per 100 ml.	Sulfide ppm	Formaldehyde ppm
			ppm 20° C	lbs/day 25° C			
1954							
7-20	T	1200	3.3*	3,700*	9,100*	0*	0*
8-27	F	0650	6.4	1,400	9,300	0	0
9-13	M	1410	11	2,000	<360#	0	-
9-22	W	0900	8.4	1,600	1,500	-	-
10-7	Th	1700	13.	2,800	93,000	-	0
Average			9.7	2,000	35,000	0	0

Excluded from average, indeterminate.

* Excluded from average as unreasonable flow due to regulation of water for power purposes.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 58 - Located on Haw River 4.3 miles below Station 57 also on this river.

Drainage Area (sq. mi.) 1090

Date	Collected	Day	Time	Discharge	Temp.	Color	Turbidity	pH Range	Alkalinity	Hardness	Chloride	D. O.	5 Day B.O.D.	Coliform
				cfs	°C	ppm	ppm		ppm	as CaCO ₃	ppm	% Sat.	ppm lbs/day	M.P.N.
1954													20°C	per 100 ml.
7-20		M	1430	170*	29*	460*	220*	7.6*	0*	77*	21*	6.8*	4.2*	9,300*
8-27		F	0730	31	27	110	20	8.7	7	116	54	7.4	3.2	4,300
9-13		M	1505	30	21	210	15	8.9	10	112	50	11.5	11	940
9-22		W	1000	31	21	160	30	8.2	0	114	36	5.5	9.2	91
10-7		Th	1730	32	23	170	25	8.0	0	64	59	10.5	6.2	93,000
Average				31	23	160	25	7.6 to 8.9	4	102	50	8.7	7.4	25,000

* Excluded from average as unseasonable flow due to regulation of water for power purposes.

Station 59 - Located on Haw River at Bynum 14.8 miles below Station 58 also on this river and above domestic water supply of Odel Manufacturing Co. and point of discharge of untreated sewage from this company.

Drainage Area (sq. mi.) 1280

7-12	M	1200	202	21	120	30	7.9	0	69	42	24	7.8	87	3.1	4,200	4,300
7-21	W	1630	230	29	320	100	7.4	0	78	36	22	6.2	79	2.3	3,600	430
8-5	Th	1345	327	28	260	230	7.6	0	48	36	25	7.1	90	3.8	8,400	360
9-2	Th	0625	30	23	160	30	6.9	0	87	48	49	10.4	120	5.7	1,100	1,500
9-24	F	0915	36	22	140	10	7.4	0	128	54	42	6.6	75	6.4	1,600	730
Average			165	25	200	80	6.9 to 7.9	0	82	43	32	7.6	90	4.3	3,800	1,500

Note: Extreme variations in flow due to regulation of water for power purposes at this point and upstream points.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 60 - Located on Haw River 5.7 miles below untreated sewage from Odel Manufacturing Co., and 0.1 of a mile above Robeson Creek receiving sewage and industrial waste from Pittsboro area.

Drainage Area (sq. mi.) 1310

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-12	M	1530	318	24	110	30	8.6	5	63	54	23	8.6	101	3.9	8,400	930
7-21	W	1610	418	30	280	260	7.8	0	84	40	26	7.3	96	2.4	6,800	2,400
8-5	Th	1305	386	30	340	120	8.1	0	50	30	24	9.1	120	2.5	6,500	7,300
9-2	Th	0805	72	18	140	35	8.2	0	126	48	49	9.1	95	5.2	2,500	2,400
9-24	F	1130	31	25	75	10	7.3	0	134	46	37	12.0	143	-	-	230
Average			245	25	190	90	7.3 to 8.6	1	91	44	32	9.2	111	3.5	6,100	2,700

Note: Extreme variations in flow due to regulation of water for power purposes at upstream points.

Station 60A (Old W11) - Located on Robeson Creek at Pittsboro's intake.

Drainage Area (sq. mi.)

9-2	Th	0900	22	460	60	6.7	0	22	34	3	4.6	52	4.4	430
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TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 61 - Located on Robeson Creek below Pittsboro's water supply dam and above point of effluent discharge from Pittsboro's sewage and industrial waste treatment plant. Drainage Area (sq. mi.) 8.93

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
7-12	M	1300	.06	22	-	-	7.7	0	49	78	12	8.8	100	4.5	2	91
7-21	W	1500	.37	26	140	160	7.1	0	32	40	5	6.7	82	1.7	4	9,300
8-5	Th	1735	.41	25	460	220	7.0	0	27	32	6	6.3	75	1.3	4	930
9-2	Th	0600	.01	16	130	25	7.1	0	31	48	5	7.2	72	1.6	1	730
9-24	F	1032	.01	22	44	6	6.6	0	67	94	18	7.4	84	2.0	1	9,300
Average			.17	22	190	100	6.6 to 7.7	0	41	58	9	7.3	83	2.2	2	4,100

Station 62 - Located on Robeson Creek below point of effluent discharge from Pittsboro's sewage and industrial waste treatment plant. Drainage Area (sq. mi.) 9.19

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-12	M	1330	0.1	24	70	55	7.2	0	89	80	16	1.8	21	-	-	23,000
7-21	W	1535	.37	26	70	65	7.0	0	49	38	10	0.7	9	6.9	17	930,000
8-5	Th	1430	.5	25	210	100	6.9	0	42	40	8	1.9	23	4.3	15	430,000
9-2	Th	0535	.03	28	160	25	6.8	0	56	54	10	0.5	6	4.7	1	91,000
9-24	F	1045	.01	21	210	10	6.8	0	104	64	18	0.6	7	7.6	1	93,000,000
Average			.20	25	140	50	6.8 to 7.2	0	68	55	12	1.1	13	5.9	9	19,000,000

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 63 - Located on Turkey Creek below pasture and above point of discharge of Webster Poultry Plant's untreated industrial waste. Drainage Area (sq. mi.) 3.80

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol, ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-12	M	1355	0*	24*	50*	10*	7.1*	0*	41*	66*	8*	4.0*	47*	3.1*	-	2,400*
7-21	W	1430	.05	26	520	320	6.8	0	27	34	4	3.5	43	1.9	1	24,000
8-5	Th	1555	.01	24	1,080	650	6.7	0	24	26	4	2.3	27	2.9	1	24,000
9-2	Th	0735	0*	23*	280*	70*	7.0*	0*	44*	34*	8*	1.2*	14*	5.1*	-	93,000*
9-24	F	1020	0	Sample omitted as there were only intermittent pools of water. Zero flow omitted from average.												
Average			.03	25	800	500	6.7 to 7.1		25	30	4	2.9	35	2.4	1	24,000

* Excluded from average as samples were collected to represent water in pool with no overflow.

Station 64 - Located on Turkey Creek below point of discharge of Webster Poultry Plant's untreated industrial waste. Drainage Area (sq. mi.) 3.88

7-12	M	1415	.13	24	460	10	7.3	0	103	62	20	0.0	0	19	17	93,000
7-21	W	1355	.07	26	780	200	7.1	0	82	48	21	0.3	4	140	66	1,100,000,000#
8-5	Th	1550	.07	27	1,300	700	6.7	0	119	68	41	0.0	0	200	95	24,000,000
9-2	Th	0740	0*	23*	240*	180*	6.9*	0*	172*	72*	55*	0.0*	0*	190*	-	93,000,000*
9-24	F	1020	.01	23	1,660	450	6.6	0	276	108	76	0.0	0	260	18	110,000,000
Average			.07	25	1,060	340	6.6 to 7.3	0	145	72	40	<0.1	<1	150	49	45,000,000

* Excluded from average as sample was collected to represent water in pool with no overflow.

Excluded from average, indeterminate.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 65 - Located on Robeson Creek 1.2 miles below Station 62 on this creek and 1.2 miles below Station 64 on Turkey Creek near intake and dam of Gould Farms irrigation system. Drainage Area (sq. mi.) 18.6

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH		Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm		Coliform M.P.N. per 100 ml.
							Range	ppm						20°C	25°C	
7-12	M	1515	.06	24	70	55	7.0	0	44	68	12	4.3	51	2.4	10	910
7-21	W	1345	.9	24	400	160	7.1	0	39	44	7	4.3	51	2.3	14	4,300
8-5	Th	1710	.14	25	340	180	7.0	0	27	30	6	5.5	65	3.3	3	24,000
9-2	Th	0825	.28	20	500	80	7.0	0	37	40	8	1.9	21	3.6	7	15,000
9-24	F	1100	.02	21	200	55	6.5	0	37	10	6	0.1	1	-	-	1,400
Average			.28	23	300	110	6.5 to 7.1	0	37	38	8	3.2	38	2.9	9	9,100

Station 66 - Located on Robeson Creek 3.7 miles below Station 65 on this creek and 0.4 mile above Haw River. Drainage Area (sq. mi.) 27.2

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH		Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm		Coliform M.P.N. per 100 ml.
							Range	ppm						20°C	25°C	
7-12	M	1530	0.1	24	34	30	7.7	0	34	66	6	8.5	100	0.9	1	910
7-21	W	1320	1.2	26	130	35	7.8	0	28	38	7	8.9	109	0.7	6	930
8-5	Th	1630	1.8	28	520	370	7.2	0	26	40	8	8.5	108	1.4	17	>1,100,000#
9-2	Th	0745	.4	18	65	20	7.2	0	33	44	6	7.9	83	1.5	4	2,100
9-24	F	1145	.02*	21*	1,380*	450*	6.7*	0*	42*	64*	7*	4.3*	48*	2.1*	1*	930*
Average			.9	24	190	110	6.7 to 7.8	0	33	47	7	8.5	100	1.1	7	1,300

Excluded from average, indeterminate.

* Excluded from average because of unsatisfactory local sampling conditions.

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 67 - Located on New Hope Creek above the point of effluent discharge from Durham's New Hope sewage and industrial waste treatment plant. Drainage Area (sq. mi.) 36.4

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. lbs/day	Coliform M.P.N. per 100 ml.	
1954																
8-3	T	1115	3.8	24	170	100	7.1	0	30	38	2	6.0	70	1.2	31	9,300
8-20	F	0610	.25	24	120	30	7.1	0	42	44	3	4.0	47	1.9	3	<350#
9-8	W	1340	0*	25*	120*	15*	7.1*	0*	31*	38*	3*	5.0*	60*	3.4*	-	43,000*
10-14	Th	1715	0	Sample omitted as there were only intermittent pools of water.												Flow excluded from average.
10-25	M	0745	.20	12	180	30	6.6	0	21	44	2	6.2	57	3.9	5	7,300
Average			1.4	20	160	55	6.6 to 7.1	0	31	42	2	5.4	58	2.3	13	8,300

#Excluded from average, indeterminate.

*Excluded from average as sample was collected to represent water in pool with no overflow.

Station 69 -- Located on New Hope Creek below the point of effluent discharge from Durham's New Hope sewage and industrial waste treatment plant.																Drainage Area (sq. mi.) 52.2	
8-3	T	1135	13*	24*	2,200*	1,600*	6.8*	0*	28*	42*	7*	4.1*	48*	4.4*	390*	>11,000,000*	
8-20	F	0700	1	25	100	10	6.9	0	46	70	27	1.0	12	6.3	43	360,000	
9-8	W	1405	1	28	70	7	6.9	0	27	30	7	5.2	66	6.6	45	910,000	
10-14	Th	1730(est)	1.1	24	65	7	7.0	0	76	70	32	2.6	31	4.5	33	93,000	
10-25	M	0900	.8	13	-	-	6.8	0	63	66	23	1.7	16	5.5	30	150,000	
Average			1.0	23	80	8	6.8 to 7.0	0	53	59	22	2.6	31	5.7	38	380,000	

*Excluded from average, unseasonable flow.

TABLE 7
ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 70-- Located on New Hope Creek 2.7 miles below Station 69. Drainage Area (sq. mi.) 57.0

Date Col- lected 1957	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-3	T	1230	1.3*	26*	65*	25*	7.2*	0*	49*	54*	5.8*	71*	-	-	15,000*
8-20	F	0840	1.4	25	100	10	7.2	0	96	72	1.0	12	7.3	69	43,000
9-8	W	1140	1	28	-	-	7.2	0	53	52	5.3	67	9.0	61	15,000
10-14	Th	1645	1.5	21	140	25	7.3	0	133	78	1.5	17	11	110	240,000
10-25	M	0615	1.7	12	80	20	6.7	0	52	64	3.4	31	-	-	93,000
Average			1.4	22	110	20	6.7 to 7.3	0	84	67	2.8	32	9.1	80	98,000

*Excluded from average, unseasonable flow.

Station 71 -- Located on Third Fork Creek 3.1 miles below Virginia-Carolina Chemical Corporation's fertilizer plant and above point of effluent discharge from Durham's Third Fork Creek sewage and industrial waste treatment plant.

Station 71 - Located on Third Fork Creek 3.1 miles below Virginia-Carolina Chemical Corporation's fertilizer plant and above point of effluent discharge from Durham's Third Fork Creek sewage and industrial waste treatment plant.															Drainage Area (sq. mi.) 7.51	
8-3	T	1430	1.3	27	780	600	6.5	0	32	86	16	63	4.5	39	240,000	
8-20	F	0715	.8	24	460	140	6.8	0	55	100	26	73	2.9	16	240,000	
9-8	W	1600	Trickle Sample omitted because of insufficient flow.													
10-12	T	0530	.13	24	70	25	7.1	0	106	112	46	78	2.2	2	2,400,000	
10-14	Th	1655	.13	21	80	20	6.9	0	122	108	53	67	2.0	2	93,000	
10-25	M	1000	.2	13	260	60	6.6	0	110	4	53	69	4.2	6	24,000	
Average			.5	22	340	170	6.5 to 7.1	0	85	82	39	70	3.2	13	600,000	

SPECIAL ANALYSES

Date Collected	Cyanide ppm	Fluoride ppm
4/29/55	<.05	
6/27/55	2.6	

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 72 - Located on Third Fork Creek below point of effluent discharge from Durham's Third Fork Creek sewage and industrial waste treatment plant and above point of effluent discharge from Hope Valley Mutual Sewerage Disposal Association, Inc., sewage treatment plant. Drainage Area (sq. mi.) 11.1

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B. O. D. lbs/day 25°C	Coliform M.C.N. per 100 ml.
8-3	T	1400	4	26	340	280	6.5	0	31	54	25	3.9	48	11	300	4,600,000
8-20	F	0815	3.0	24	46	90	7.1	0	95	80	56	1.8	21	16	320	43,000,000
9-8	W	1700	1.5	26	80	20	6.7	0	31	54	16	0.0	0	-	-	9,300,000
10-12	T	0545	1.7	21	85	35	7.2	0	161	94	89	0.0	0	44	500	>1,100,000,000#
10-14	Th	1630	1.5	22	240	30	7.1	0	170	70	70	0.0	0	46	470	1,500,000
10-25	M	1015	2.5	14	120	15	7.0	0	167	96	47	0.0	0	24	410	43,000,000
Average			2.4	22	150	80	6.5 to 7.2	0	109	75	51	1.0	12	28	400	20,000,000

#Excluded from average, indeterminate.

Station 73 - Located on Third Fork Creek below point of effluent discharge from Hope Valley Mutual Sewerage Disposal Association, Inc. sewage treatment plant.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B. O. D. lbs/day 25°C	Coliform M.C.N. per 100 ml.
8-3	T	1330	4.2	25	180	120	6.5	0	26	70	15	2.5	30	8.2	230	930,000
8-20	F	0910	2.6	24	70	320	7.2	0	95	90	67	1.2	14	9.5	170	930,000
9-8	W	1500	1.5	26	280	35	6.7	0	29	68	24	5.0	61	21	210	930,000
10-12	T	0600	1.1	21	170	20	7.4	0	201	90	50	0.0	0	32	240	46,000,000
10-14	Th	1600	2.1	21	240	40	7.1	0	166	92	64	0.0	0	24	340	2,400,000
10-25	M	1120	3	14	120	20	6.9	0	166	100	48	0.8	8	18	360	2,100,000
Average			2.4	22	180	95	6.5 to 7.4	0	114	85	45	1.6	19	19	260	8,900,000

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 74 - Located on Third Fork Creek 0.7 of a mile below Station 73 also on this creek. Drainage Area (sq. mi.) 16.6

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
								Phenol.	Total			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
8-3	T	1315	4	26	1,380*	1,000*	6.7	0	41	60	22	1.6	20	9.6	260	2,400,000
8-20	F	0930	3	25	39	100	7.2	0	98	80	78	1.8	21	10	200	430,000
9-8	W	1515	1.5	26	100	10	6.7	0	40	60	16	0.0	0	13	130	930,000
10-12	T	0630	1.5	21	7	20	7.4	0	200	88	54	0.0	0	10	100	430,000
10-14	Th	1540	2	21	240	45	7.1	0	158	80	60	0.0	0	62	840	46,000,000
10-25	M	1105	3	14	160	20	7.0	0	172	90	53	0.0	0	26	530	4,400,000
Average			2.5	22	110	40	6.7 to 7.4	0	118	76	47	0.6	7	22	340	9,100,000

*Excluded from average because high color and turbidity are due to local runoff.

Station 75 - Located on New Hope Creek 3.4 miles below Station 70 and all sources of pollution from Durham and Hope Valley Mutual Sewerage Disposal Association, Inc. Drainage Area (sq. mi.) 76.3

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
								Phenol.	Total			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
8-3	T	1240	18*	24*	120*	80*	7.1*	0*	95*	70*	35*	0.9*	11*	5.4*	660*	240,000*
8-20	F	0955	7.0	24	260	20	6.8	0	39	52	22	1.5	18	2.5	120	43,000
9-8	W	1530	2.2	26	140	10	7.0	0	95	70	29	4.2	51	17	250	93,000
10-12	T	0640	1.7	20	130	15	7.3	0	159	84	52	0.3	3	4.6	53	24,000
10-14	Th	1530	2.7	20	380	15	7.1	0	150	80	57	0.2	2	6.5	120	4,300,000
10-25	M	1045	4.8	13	120	30	6.8	0	85	74	35	2.1	20	3.7	120	93,000
Average			3.7	21	210	20	6.8 to 7.3	0	106	72	39	1.7	19	6.9	130	910,000

*Excluded from average, unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 76 -- Located on Gum Creek below partially treated industrial waste from Swartz Tallow Company. Drainage Area (sq. mi.) 0.96

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
1954													
8-3	T	1310	0*										
8-20	F	0930	0*										
9-8	W	1545	0*										
10-12	T	0635	0*										
10-14	Th	1605(est)	0*										
10-25	M	1100	0*										

*No samples were collected as there was no stream flow at the time of sampling.

Station 77 -- Located on Bolin Creek above the point of effluent discharge from Chapel Hill's Bolin Creek Sewage Treatment Plant.

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-27	T	0930	.58	23	160	140	6.7	0	42	50	8.3	1.0	930
8-4	W	0620	.70	22	240	180	7.3	0	36	50	7.7	1.6	21,000
8-18	W	1110	.7	25	680	20	7.4	0	37	50	6.4	3.2	150,000
9-14	T	1310	.38	22	36	6	7.5	0	56	64	10.6	2.6	9,300
9-29	W	1645	.52	21	55	10	6.5	0	51	72	4.9	2.2	>1,100,000#
Average			.58	23	230	70	6.5 to 7.5	0	44	57	7.6	2.1	45,000

#Excluded from average, indeterminate.

TABLE 7
ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 78 - Located on Bolin Creek below the point of effluent discharge from Chapel Hill's Bolin Creek Sewage Treatment Plant. Drainage Area (sq. mi.) 11.6

Date	Col- lected	Day	Time	Dis- charge	Temp. °C	Color	Tur- bidity	pH Range	Alkalinity Phenol.	Hardness as CaCO ₃	Chlo- ride	D. O. ppm	% Sat.	5 Day B.O.D. ppm	lbs/day 20°C	25°C	Coliform M.P.N. per 100 ml.
1954																	
7-27	T		1000	1.8	23	85	140	6.6	0	35	16	9.2	106	3.8		46	15,000
8-4	W		0625	1.7	22	260	160	7.1	0	33	10	6.4	73	3.5		40	43,000
8-18	W		1135	2.0	26	680	100	7.1	0	23	16	6.5	79	3.5		47	43,000
9-14	T		1345	1.8	26	140	7	7.1	0	43	31	6.4	78	5.6		68	9,300
9-29	W		1635	2.1	21	360	50	6.6	0	61	30	4.1	46	>14#	>190#	>1,100,000#	
Average				1.9	24	300	90	6.6 to 7.1	0	39	21	6.5	76	4.1		50	28,000

#Excluded from average, indeterminate.

Station 78A (Old B4) - Located on Cedar Fork at Eastwood Lake bathing area.

8-18	W	1300	22	36	6	8.0	0	17	20	4	7.9	90	0.5	<360
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Station 79 - Located on Little Creek 4.3 miles below Station 78 on Bolin Creek.

7-27	T	1020	1.1	23	110	160	6.5	0	36	50	16	6.0	69	1.4	10	360	
8-4	W	0640	2.0	23	1,080*	500*	7.0	0	25	42	6	5.4	62	2.1	28	24,000	
8-18	W	1150	2.5	25	65	20	7.1	0	39	64	18	4.7	56	2.2	37	4,300	
9-14	T	1525	.41	20	49	6	7.0	0	41	70	28	6.1	66	1.6	4	910	
9-29	W	1600	.58	22	65	10	6.5	0	49	60	36	6.7	76	2.5	10	93,000	
Average			1.3	23	70	50	6.5 to 7.1	0	38	57	21	5.8	66	2.0	18	25,000	

*Excluded from average because high color and turbidity are due to local runoff.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 79A (Old W12) - Located on Morgan Creek (University Lake) at Chapel Hill's
raw water supply intake. Drainage Area (sq. mi.)

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. %	5 Day B.O.D. ppm lbs/day 20°C 25°C	Coliform M.P.N. per 100 ml.
8-18	W	1230		18	15	6.8	0	62	24	4	0.0*	0	36

*Sample taken at 18' depth.

Station 80 - Located on Morgan Creek below University Lake and above point of effluent
discharge from Carrboro's sewage treatment plant. Drainage Area (sq. mi.) 31.7

7-27	T	1255	.1	26	100	6.4	0	25	34	6	6.7	82	1.7	1	240,000
8-4	W	0730	5*	26*	100*	7.2*	0*	22*	44*	5*	6.8*	83*	1.9*	64*	3,600*
8-18	W	1040	.15	25	7	7.1	0	29	46	5	5.8	69	1.3	1	2,300
9-14	T	1655	.02	25	6	7.2	0	35	54	6	9.5	113	1.8	1	730
9-29	W	1400	.01	24	15	6.5	0	40	70	6	9.6	113	3.0	1	>1,100,000#
Average			.07	25	30	6.4 to 7.2	0	32	51	6	7.9	94	2.0	1	81,000

*Excluded from average, unseasonable flow.

#Excluded from average, indeterminate.

Station 81 - Located on Morgan Creek below point of effluent discharge from Carrboro's
Sewage Treatment Plant. Drainage Area (sq. mi.) 31.7

7-27	T	1220	0.2	26	25	6.1	0	26	40	11	2.1	26	9.8	35	2,400,000
8-4	W	0710	5.6*	25*	180*	7.3*	0*	22*	58*	6*	4.8*	57*	11*	410*	4,300,000*
8-18	W	1440	.4	25	15	6.9	0	46	54	11	1.3	15	16	43	730,000
9-14	T	1610	.2	26	20	7.4	0	85	74	27	0.0	0	52	70	>11 x 10 ⁷ #
9-29	W	1700	.1	21	30	6.5	0	67	0	20	0.0	0	67	45	>11 x 10 ⁹ #
Average			.2	25	25	6.1 to 7.4	0	56	42	17	0.9	10	36	48	1,600,000 121

*Excluded from average, unseasonable flow.

#Excluded from average, indeterminate.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 82 - Located on Morgan Creek 2.8 miles below Station 81 on this creek and above point of effluent discharge from Chapel Hill's Morgan Creek Sewage Treatment Plant.

Drainage Area (sq. mi.) 37.4

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-27	T	1100	1.0	27	55	35	7.5	0	35	40	13	10.0	124	2.3	16	< 360#
8-4	W	0745	7.4*	26*	180*	140*	6.9*	0*	21*	40*	4*	7.4*	90*	2.6*	130*	93,000*
8-18	W	1330	2.4	25	1,400**	400**	7.2	0	25	44	8	6.8	81	2.6	42	23,000
9-14	T	1500	.2	26	-	-	7.3	0	67	72	26	11.5	140	1.0	1	> 11 x 10 ⁹ #
9-29	W	1615	1.0	22	60	15	6.5	0	46	70	16	11.0	125	1.6	11	43,000
Average			1.2	25	60	25	6.5 to 7.5	0	43	57	16	9.1	118	1.9	18	33,000

*Excluded from average, unseasonable flow.

#Excluded from average, indeterminate.

**Excluded from average because high color and turbidity are due to local runoff.

Station 83 - Located on Morgan Creek 1/4 of a mile below point of effluent discharge from Chapel Hill's Morgan Creek Sewage Treatment Plant.

Drainage Area (sq. mi.) 38.0

7-27	T	1130	2.3	26	100	20	6.5	0	35	46	19	6.1	74	3.0	47	46,000,000
8-4	W	0810	8.1*	26*	320*	180*	7.2*	0*	26*	48*	5*	6.6*	80*	11*	600*	910,000*
8-18	W	0530	3.2	24	3,060**	700**	7.2	0	30	34	7	6.3	74	3.2	69	93,000
9-14	T	1515	1	26	50	7	7.3	0	79	60	29	4.3	52	6.3	43	930,000
9-29	W	1625	2.2	22	110	20	6.7	0	49	74	19	6.2	70	15	220	150,000
Average			2.2	25	110	15	6.5 to 7.3	0	48	54	19	5.7	68	6.9	95	12,000,000

*Excluded from average, unseasonable flow.

**Excluded from average because high color and turbidity are due to local runoff.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 84 - Located on Morgan Creek 3.0 miles below Station 83 also on this creek.

Drainage Area (sq. mi.) 45.6

Date Collected 1954	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20° C	lbs/day 25° C	Coliform M.P.N. per 100 ml.
7-27	T	1035	1.4	23	70	20	6.5	0	36	46	18	6.6	76	1.2	11	910
8-4	W	0830	33*	26*	260*	180*	7.0*	0*	24*	30*	5*	6.0*	73*	2.4*	540*	43,000*
8-18	W	0545	10*	24*	580*	320*	7.1*	0*	32*	52*	14*	4.7*	55*	4.9*	330*	430,000*
9-14	T	1600	.6	26	60	50	7.2	0	54	56	25	5.9	72	1.2	5	9,300
9-29	W	1320	1.5	24	70	15	6.6	0	47	72	26	4.1	48	4.3	44	9,300
Average			1.2	24	65	30	6.5 to 7.2	0	46	58	23	5.5	65	2.2	20	6,500

*Excluded from average because of unseasonable flow.

Station 85 - Located on New Hope River 10.0 miles below Station 75 also on New Hope River, and below all sources of pollution tributary to this river from Durham, Chapel Hill and Carrboro.

Drainage Area (sq. mi.) 230

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20° C	lbs/day 25° C	Coliform M.P.N. per 100 ml.
7-29	Th	0950	4.7	24	65	20	7.3	0	32	54	30	5.0	59	2.0	63	210
8-4	W	0900	50*	24*	1,320*	1,000*	6.9*	0*	23*	40*	10*	5.4*	64*	3.3*	1,100*	43,000*
8-18	W	0600	7	23	110	25	7.2	0	43	60	25	5.2	60	3.4	160	15,000
9-9	Th	1615	1.9	25	49	20	7.4	0	63	60	37	5.0	60	1.5	19	43,000
10-8	F	0815	2.2	20	60	6	6.9	0	102	84	45	2.4	26	2.4	36	2,300
10-26	T	1300	8.0	14	130	20	7.2	0	32	50	30	5.3	51	1.2	65	910
Average			4.8	21	85	20	6.9 to 7.4	0	54	62	33	4.6	51	2.1	69	12,000

*Excluded from average, unseasonable flow.

TABLE 7

ANALYTICAL RESULTS
HAW RIVER DRAINAGE AREA

Station 86 - Located on New Hope River 5.2 miles below Station 85 also on New Hope River.

Drainage Area (sq. mi.) 285

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity		pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D. ppm 20°C	ppm lbs/day 25°C	Coliform M.P.N. per 100 ml.
						idity ppm	idity ppm					ppm	% Sat.			
7-29	Th	0915	6.7	25	160	40	40	7.0	0	54	13	5.3	63	1.4	63	430
8-4	W	1215	53*	26*	230*	180*	180*	7.2*	0*	48*	23*	5.4*	66*	1.5*	540*	1,500*
8-18	W	0645	6.7	24	100	20	20	7.1	0	60	19	5.3	62	1.8	81	360
9-9	Th	1600	3.2	25	210	20	20	7.0	0	50	16	3.7	44	1.4	30	1,500
10-8	F	0800	3.2	20	70	10	10	6.9	0	104	40	5.1	55	2.5	54	910
10-26	T	1340	11	14	240	50	50	7.1	0	48	19	6.2	60	1.0	74	9,300
Average			6.2	22	160	30	30	6.9 to 7.2	0	63	21	5.1	57	1.6	60	2,500

* Excluded from average, unseasonable flow.

Station 87 - Located on Beaver Creek 0.5 of a mile above unnamed stream receiving effluent from Apex's Beaver Creek sewage treatment plant.

Drainage Area (sq. mi.) 4.14

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity		pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D. ppm 20°C	ppm lbs/day 25°C	Coliform M.P.N. per 100 ml.
						idity ppm	idity ppm					ppm	% Sat.			
7-29	Th	1145	0*	-	-	-	-	-	-	-	-	-	-	-	-	-
8-4	W	1010	.05	23	2,920**	1,200**	1,200**	6.5	0	20	5	5.7	66	2.5	1	43,000
8-18	W	0830	0*	-	-	-	-	-	-	-	-	-	-	-	-	-
9-9	Th	1845	0*	-	-	-	-	-	-	-	-	-	-	-	-	-
10-8	F	0620	0*	-	-	-	-	-	-	-	-	-	-	-	-	-
10-26	T	1450	.02	15	60	6	6	7.2	0	20	6	6.3	62	0.8	1	9,300

* No samples collected as stream bed was dry.

** High color and turbidity due to local runoff.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 88 - Located on unnamed stream below point of effluent discharge from Apex's Beaver Creek sewage treatment plant. Drainage Area (sq. mi.) 0.47

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
								Phenol. ppm	Total ppm			ppm	% Sat.			
7-29	Th	1145	.05	25	260	160	7.0	0	117	70	41	0.0	0	56	19	2,400,000
8-4	W	0950	.06	23	120	80	6.9	0	40	70	21	5.9	68	7.6	3	210,000
8-18	W	0800	.06	22	65	40	7.2	0	59	68	20	8.0	91	9.6	4	2,400,000
9-9	Th	1830	.08	26	-	25	6.9	0	120	88	37	0.0	0	-	-	43,000,000
10-8	F	0600	.05	21	140	25	7.1	0	200	98	51	0.0	0	78	26	43,000,000
10-26	T	1510	.08	17	140	25	7.0	0	124	48	42	1.6	16	58	31	24,000,000
Average			.06	22	150	60	6.9 to 7.2	0	110	74	35	2.6	29	42	17	19,000,000

Station 89 - Located on Beaver Creek 0.2 of a mile below unnamed stream receiving effluent from Apex's Beaver Creek sewage treatment plant. Drainage Area (sq. mi.) 6.53

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
								Phenol. ppm	Total ppm			ppm	% Sat.			
7-29	Th	1145	0*	-	-	-	-	-	-	-	-	-	-	-	-	-
8-4	W	1030	.1	23	660	500	6.5	0	16	50	12	7.1	82	1.6	1	2,400
8-18	W	0815	.1	23	920	7	6.5	0	8	54	4	7.1	82	2.1	1	43,000
9-9	Th	1848	0*	-	-	-	-	-	-	-	-	-	-	-	-	-
10-8	F	0630	0*	-	-	-	-	-	-	-	-	-	-	-	-	-
10-26	T	1520	.1	14	-	-	7.2	0	23	20	2	6.7	64	0.9	1	360
Average			.1	20	800	250	6.5 to 7.2	0	16	41	6	7.0	76	1.5	1	15,000

* No samples collected as stream bed was dry.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 90 -- Located on New Hope River 3.7 miles below Station 86 also on New Hope River, and 4.1 miles above Haw River. Drainage Area (sq. mi.) 340

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
						ppm	bid- ity ppm		ppm	Total ppm			ppm	% Sat.	ppm 20°C	ppm 25°C	
7-29	Th	1415	7.5	28	240	60	60	6.9	0	26	52	13	5.5	70	1.6	81	360
8-4	W	1150	50*	26*	520*	320*	320*	7.0*	0*	27*	44*	12*	5.4*	66*	5.2*	1,800*	4,300*
8-18	W	0945	6.5	25	140	30	30	7.2	0	37	64	17	4.0	48	2.0	88	910
9-9	Th	1820	3.2	26	90	20	20	7.2	0	40	56	19	6.6	80	2.3	50	210
10-8	F	0845	3	20	-	-	-	7.1	0	89	94	38	4.7	51	1.4	28	360
10-26	T	1600	12	14	240	50	50	6.9	0	29	50	10	6.1	59	1.6	130	360
Average			6.4	23	180	40	40	6.9 to 7.2	0	44	63	19	5.4	62	1.8	75	440

* Excluded from average, unseasonable flow.

Station 91 -- Located on Haw River at Moncure 1.7 miles above mouth and below all sources of pollution except that in Shaddox Creek.

Station 91 - Located on Haw River at Moncure 1.7 miles above mouth and below all sources of pollution except that in Shaddox Creek.																	Drainage Area (sq. mi.) 1700	
7-29	Th	1340	86	29	75	75	75	8.9	15	22	40	38	9.9	127	6.4	3,700	14,000	
8-4	W	1115	640*	27*	640*	390*	390*	7.7*	0*	60*	61*	18*	6.8*	84*	3.8*	17,000*	2,500*	
8-18	W	1600	43	29	270	12	12	8.5	3	37	51	18	7.6	97	1.8	520	930	
9-9	Th	1745	26	28	150	20	20	9.4	23	92	41	37	13.3	170	8.2	1,400	180	
10-8	F	0530	18	20	75	15	15	7.1	0	121	77	36	5.1	56	3.1	380	920	
10-26	T	1030	140	14	370	130	130	7.4	0	22	40	32	8.4	81	1.2	1,100	1,000	
Average			63	24	190	50	50	7.1 to 9.4	8	59	50	32	8.9	106	4.1	1,400	3,400	

* Excluded from average, unseasonable flow.

TABLE 7

ANALYTICAL RESULTS

HAW RIVER DRAINAGE AREA

Station 91A - Located on Shaddox Creek above point of intermittent discharge of untreated Drainage Area (sq. mi. 14.8 fly ash waste from Carolina Power & Light Company, Cape Fear Steam Plant.

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day 20°C ppm	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-17	T	1610	0*	27	200	35	7.6	0	61	64	10	3.3	41	2.8		240
8-30	M	1000	0*	25	160	35	7.4	0	68	72	11	0.6	7	3.9		73
9-23	Th	0755	0*	18	-	15	6.9	0	105	67	26	0.6	6	3.5		930
9-29	W	1310	0*	21	70	15	7.3	0	113	61	24	0.9	10	2.1		930
Average				23	140	25	6.9 to 7.6	0	87	62	18	1.4	16	3.1		540

*Samples collected to represent condition of non-flowing water as there was no natural flow during the periods of sampling.

Station 91B - Located on Shaddox Creek near mouth below point of intermittent discharge of Drainage Area (sq. mi.)14.8 untreated fly ash waste from Carolina Power and Light Co., Cape Fear Steam Plant.

8-17	T	1555	3.0*	32	260	80	9.1	20	85	91	18	5.5	74	1.7	34	930
8-30	M	1020	3.0*	27	70	35	9.2	18	78	60	22	5.2	64	2.2	45	73
9-23	Th	0810	3.0*	25	60	20	7.5	0	93	40	33	5.3	63	4.3	87	210
9-29	W	1300	3.0*	27	49	10	7.8	0	88	34	24	5.0	62	1.7	34	240
Average			3.0	28	110	35	7.5 to 9.2	10	86	56	24	5.3	66	2.5	50	360

* The only flow at this station during periods of sampling was due to intermittent discharge of fly ash waste from the Cape Fear Steam Plant at the rate of 3.0 c.f.s. The pounds of B.O.D., therefore, represent a rate for a period of 3 to 4 hours per day. The samples were collected at mid-depth below surface scum and above bottom deposits.

EXPLANATION OF TABLE 8, RECOMMENDED CLASSIFICATIONS

The tentative recommended classifications of the surface waters in the Haw River Drainage Area of the Cape Fear River Basin are given in Table 8. These recommendations are considered to represent the best usages of the streams in the best interest of the public. They are submitted to all concerned for consideration at the public hearings and to the State Stream Sanitation Committee in its determinations of the final classifications to be assigned.

* Any stream not noted in Table 8 will carry the same classification as the stream to which it is tributary.

Key to Abbreviations Used in Table

Agri.	-	Agriculture	P	-	Polluted
DS	-	Domestic Sewage	PA	-	Populated Area
F	-	Farmlands	Rec.	-	Recreation
GP	-	Grossly Polluted	SP	-	Slight Pollution
HDA	-	Highly Developed Area	W	-	Woodlands
IW	-	Industrial Waste	WD	-	Waste Disposal
N	-	Natural	WS	-	Water Supply

Brief Explanation of Water Classifications

- A-I Water supply from uninhabited watersheds requiring only approved disinfection.
- A-II Water supply with approved complete treatment.
- B Bathing and recreation.
- C Fish and wildlife propagation.
- D Agriculture, including irrigation and livestock watering, drainage, and industrial cooling and process water supply.
- E Navigation and disposal of sewage, industrial waste or other wastes with the provision that such disposal will not create an offensive condition.

RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
I. Haw River from source to Troublesome Creek.	WF	N	Agri.	Agri.	D	
A. Rocky Branch	WF	N	Agri.	Agri.	D	
B. Mears Fork Creek	WF	N	Agri.	Agri.	D	
C. Benaja Creek from source to Dam at Scout Camp.	WF	N	Bathing	Bathing	B	Bathing for Boy Scout Camp.
D. Benaja Creek from Dam at Scout Camp to mouth.	WF	N	Agri.	Agri.	D	
E. Candy Creek	WF	N	Agri.	Agri.	D	
F. Troublesome Creek	WF	N	WS	WS	A-II	Reidsville watershed.
1. Unnamed Tributary used for bathing at Camp Chinqua Penn.	WF	N	Bathing	Bathing	B	Bathing at Camp Chinqua Penn.
II. Haw River from Troublesome Creek to supplemental water intake of City of Burlington.	WF	N	WS	WS	A-II	Burlington supplemental watershed.
Haw River from supplemental water intake of City of Burlington to N. C. Highway 87 Bridge at Altamahaw.	WF	N	Agri.	Agri.	D	
A. Little Troublesome Creek	WF&PA	P	Agri.	Agri.	D	Reidsville sewage effluent outfall.
B. Rose Creek	WF	N			A-II	Burlington supplemental watershed.
III. Haw River from N. C. Hwy. 87 Bridge at Altamahaw to mouth of Dry Creek near Bynum	WF&PA	P	WD & Agri.	Agri.	D	DS&IW from various upstream and downstream locations.
A. Reedy Fork to U. S. Hwy. 29.	WF	SP	WS	WS	A-II	Greensboro watershed.

TABLE 8

RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
1. Beaver Creek	WF	N	WS	WS	A-II	Greensboro watershed.
2. Moore Creek	WF	N	WS	WS	A-II	"
3. Brush Creek to paved Guilford College Road.	WF	N	Agri.	Agri.	D	Greensboro - High Point Airport sewage effluent.
4. Brush Creek from paved Guilford College Road to Reedy Fork.	WF	N	WS	WS	A-II	Greensboro watershed.
5. Horsepen Creek	WF&PA	N	WS	WS	A-II	"
a. Unnamed Tributary at Guilford College.	WF&PA	SP	WD	Agri.	D	Guilford College sewage effluent.
(1) Unnamed Tributary near Guilford College bathing area.	PA	N	Bathing	Bathing	B	Bathing for Guilford College.
6. Richland Creek	WF	N	WS	WS	A-II	Cone Mills water supply watershed.
7. Squirrel Branch	WF	N	WS	WS	A-II	Greensboro watershed.
B. Reedy Fork from U. S. Hwy. 29 to mouth of Buffalo Creek.	WF	N	Agri.	Agri.	D	
1. Unnamed Tributary from source to Dam at Lake Herman.	WF	N	Bathing	Bathing	B	Cone Mills Y.M.C.A. Bathing Lake
2. Unnamed Tributary from Dam at Lake Herman to Reedy Fork.	WF	N	Agri.	Agri.	D	
3. Smith Branch	WF	N	Agri.	Agri.	D	
4. Rocky Branch	WF	N	Agri.	Agri.	D	
5. Katie Branch	WF	N	Agri.	Agri.	D	
6. Buffalo Creek **	WF	GP	WD	WD	E	Effluent from Greensboro

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
a. North Buffalo Creek to sewage plant effluent outfall.	HDA	N & P	Drainage	Drainage	D	Street drainage, City of Greensboro
b. North Buffalo Creek from sewage plant effluent outfall to confluence with South Buffalo Creek.**	WF	GP	WD	WD	E	Effluent from Greensboro North Buffalo Creek sewage treatment plant.
(1) Muddy Creek	HDA	N	Agri.	Agri.	D	"
(2) Jordan Branch	PA	N	Drainage	Drainage	D	"
c. South Buffalo Creek to sewage plant effluent.	HDA	P	Drainage & WD	Drainage	D	Industrial waste from the American Agricultural Chemical Co. and Armour & Co.
(1) Ryan Creek	PA	N	Agri.	Agri.	D	"
(2) Mile Run Creek	HDA	P	WD	Drainage	D	Industrial waste from Swift & Company.
d. South Buffalo Creek from sewage plant effluent outfall to confluence with North Buffalo Creek.**	WF	GP	WD	WD	E	Effluent from Greensboro South Buffalo Creek sewage treatment plant.
C. ReedyFork from Buffalo Creek to Haw River.**	WF	GP	WD	WD	E	"
1. Parks Creek	WF	N	Agri.	Agri.	D	"
D. Travis Creek	WF	P	WD	Agri.	D	Effluent from Gibsonville's North plant.

** All Tributaries to the segments of North Buffalo Creek, South Buffalo Creek, and Reedy Fork, which are classified E, will carry the classification D.

TABLE 8
RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
1. Trickle Creek	WF	N	Agri.	Agri.	D	
E. Dry Creek	WF	N	Agri.	Agri.	D	
F. Stoney Creek to Copland Fabrics, Inc. water intake near Burlington	WF	N	WS	WS	A-II	Burlington & Hopedale watershed.
1. Grays Branch	WF	N	WS	WS	A-II	"
2. Benton Branch	WF	N	WS	WS	A-II	"
3. Toms Creek	WF	N	WS	WS	A-II	"
4. Buttermilk Creek	WF	N	WS	WS	A-II	"
a. Reed Creek	WF	N	WS	WS	A-II	"
b. Jones Creek	WF	N	WS	WS	A-II	"
c. Laughin Creek	WF	N	WS	WS	A-II	"
d. Whittie Creek	WF	N	WS	WS	A-II	"
5. Jordan Creek	WF	N	WS	WS	A-II	"
a. Owens Creek	WF	N	WS	WS	A-II	"
6. Mine Creek	WF	N	WS	WS	A-II	"
7. Deep Creek	WF	N	WS	WS	A-II	"
G. Stoney Creek from Copland Fabrics, Inc. water intake to Haw River.	WF	SP	Agri.	Agri.	D	Sewage and industrial waste from Hopedale.
H. Servis Creek	PA	N	Drainage	Drainage	D	Drainage from Burlington.

TABLE 8
RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
I. Boyds Creek	PA	N	Agri.	Agri.	D	
J. Back Creek to Dam impounding Graham water supply.	WF	N	WS	WS	A-II	Graham watershed.
1. Mill Creek	WF	N	WS	WS	A-II	Mebane watershed.
2. Quaker Creek	WF	N	WS	WS	A-II	Graham watershed.
K. Back Creek from Dam impounding Graham water supply to Haw River.	WF	SP	Agri.	Agri.	D	
L. Moadams Creek	WF&PA	GP	WD	Agri.	D	Effluent from Mebane sewage plant.
Alamance Creek to Chester H. Ross Men's Hosiery and Knitting Mill water intake.	WF	N	WS	WS	A-II	Future watershed for Gibsonville and watershed for Chester H. Ross Men's Hosiery and Knitting Mill and Town of Alamance.
1. Little Alamance Creek	WF	N	WS	WS	A-II	"
a. Beaver Creek	WF	N	WS	WS	A-II	"
b. Rock Creek	WF	N	WS	WS	A-II	"
2. Big Alamance Creek	WF	N	WS	WS	A-II	"
3. Little Creek to U. S. Hwy. 70	WF	N	Agri.	Agri.	D	Drainage from Gibsonville and vicinity.
a. Michael Branch (Cedar Creek)	WF&PA	P	WD	Agri.	D	Effluent from Gibsonville South sewage plant.
4. Little Creek from U. S. Hwy. 70 to Alamance Creek.	WF	N	WS	WS	A-II	Watershed for Chester H. Ross Men's Hosiery and Knitting Mill and Town of Alamance.
a. Ingle Branch	WF	N	Agri.	Agri.	D	

TABLE 8
RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
M. Alamance Creek from Chester H. Ross Men's Hosiery and Knitting Mill water intake to Haw River.	WF&PA	SP	Agri.	Agri.	D	Outfall from Chester H. Ross Men's Hosiery and Knitting Mill.
1. Gun Creek	WF&PA	SP	WD	Agri.	D	Effluent from Elon College sewage plant.
2. Stinking Quarter Creek	WF	N	Agri.	Agri.	D	
a. North Prong Stinking Quarter Creek.	WF	N	Agri.	Agri.	D	
(1) Chocolate Creek	WF	N	Agri.	Agri.	D	
b. South Prong Stinking Quarter Creek.	WF	N	Agri.	Agri.	D	
(1) Unnamed Tributary	WF	N	Agri.	Agri.	D	
(a) Kimesville Lake	WF	N	Bathing	Bathing	B	
(2) Little Creek	WF	N	Agri.	Agri.	D	
c. Rock Creek	WF	N	Agri.	Agri.	D	
3. Little Alamance Creek	HDA	N	Drainage	Drainage	D	Effluent from Burlington sewage plant.
a. Brown Branch	HDA	N	Drainage	Drainage	D	Within City of Burlington
(1) Dye Branch	HDA	N	Drainage	Drainage	D	"
N. Haw Creek	WF	N	Agri.	Agri.	D	
1. Rock Creek	WF	N	Agri.	Agri.	D	
O. Varnals Creek	WF	N	Agri.	Agri.	D	
P. Chub Creek	WF	N	Agri.	Agri.	D	

RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
Q. Meadow Creek	WF	N	Agri.	Agri.	D	
R. Whiteheat Creek	WF	N	Agri.	Agri.	D	
S. Motes Creek (Newland Creek)	WF	N	IWS	IWS	D	
T. Marys Creek	WF	N	Agri.	Agri.	D	
1. Long Branch	WF	N	Agri.	Agri.	D	
U. Cane Creek (North side Haw River)*	WF	N	Agri.	Agri.	D	
1. Hog Branch	WF	N	Agri.	Agri.	D	
2. Turkey Hill Creek	WF	N	Agri.	Agri.	D	
3. Bear Creek	WF	N	Agri.	Agri.	D	
a. Water Fork	WF	N	Agri.	Agri.	D	
4. Toms Creek	WF	N	Agri.	Agri.	D	
5. Caterpillar Creek	WF	N	Agri.	Agri.	D	
V. Cane Creek (South side Haw River)*	WF	N	Agri.	Agri.	D	
1. Wells Creek	WF	N	Agri.	Agri.	D	
2. Hunting Branch	WF	N	Agri.	Agri.	D	
3. Foust Creek	WF	N	Agri.	Agri.	D	
4. South Fork Cane Creek	WF	N	Agri.	Agri.	D	
W. Collins Creek	WF	N	Agri.	Agri.	D	
X. Terrell Creek	WF	N	Fishing	Fishing	C	
1. Lick Creek	WF	N	Fishing	Fishing	C	

Industrial process water for
Sellers Manufacturing Company.

TABLE 8
RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
Y. Ferrells Creek	WF	N	Agri.	Agri.	D	
1. Meadow Branch	WF	N	Agri.	Agri.	D	
IV. Haw River from Dry Creek near Bynum to water supply intake at O'Dell Manufacturing Company at Bynum.	WF&PA	N	WS	WS	A-II	Watershed for O'Dell Mfg. Co. and Bynum.
A. Dry Creek	WF	N	Agri.	Agri.	D	
B. Wilkinson Creek	WF	N	WS	WS	A-II	Watershed for O'Dell Mfg. Co. and Bynum.
V. Haw River water supply intake at O'Dell Mfg. Co. at Bynum to confluence with Deep River.	WF	N	Fishing	Fishing	C	
A. Pokeberry Creek	WF	N	Agri.	Agri.	D	
1. Ward Branch	WF	N	Agri.	Agri.	D	
B. Robeson Creek to first paved Hwy. bridge.	WF	N	WS	WS	A-II	Pittsboro watershed.
1. Hill Creek	WF	N	Agri.	WS	A-II	Emergency water supply for Pittsboro.
C. Robeson Creek from first Hwy. bridge to mouth.	WF&PA	N	Agri.	Agri.	D	Pittsboro sewage effluent outfall.
1. Turkey Creek	WF	GP	Agri.	Agri.	D	Webster Poultry Company industrial waste outfall.
D. Stinking Creek	WF	N	Agri.	Agri.	D	
E. New Hope Creek to Little Creek	WF	N	Agri.	Agri.	D	Effluent from Durham's New Hope sewage plant.

RECOMMENDED CLASSIFICATIONS

HAW RIVER DRAINAGE AREA

Stream*	Character of District		Condition of Waters	Chief Present Usage		Proposed Class	Comments
	District						
1. Mountain Creek	WF		N	Agri.	Agri.	D	
2. Unnamed Tributary at Camp New Hope.	WF		N	Bathing	Bathing	B	Bathing at Camp New Hope.
3. Old Field Creek	WF		N	Agri.	Agri.	D	
4. Church Branch	WF		N	Agri.	Agri.	D	
5. Little Creek	WF		N	Agri.	Agri.	D	
6. Mud Creek	WF		N	Agri.	Agri.	D	
7. Sandy Creek	WF		P	Agri.	Agri.	D	
8. Third Fork Creek	WF		P	WD	Agri.	D	Effluent from Durham's Third Fork sewage plant and Hope Valley's sewage plant.
9. Gum Creek	WF		P	Agri.	Agri.	D	Industrial waste from Swartz Tallow Company.
F. New Hope Creek from Little Creek to New Hope River (mouth of Morgan Creek.)	WF&P		N	Fishing	Fishing	C	
1. Little Creek	WF&P		P	Agri.	Agri.	D	
a. Bolin Creek	WF&P		N	Agri.	Agri.	D	Effluent from Chapel Hill's Bolin Creek sewage plant.
(1) Buckhorn Branch	WF		N	Agri.	Agri.	D	
(2) Hogan Creek	WF		N	Agri.	Agri.	D	
(3) Tanbank Branch	PA		N	Drainage	Drainage	D	Within Town of Chapel Hill.
(4) Booker Creek to Dam at Eastwood Lake	WF		N	Bathing	Bathing	B	

TABLE 8
RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
(a) Crow Branch	WF	N	Bathing	Bathing	B	
(b) Cedar Fork	WF	N	Bathing	Bathing	B	
(5) Booker Creek from Dam at Eastwood Lake to mouth.	WF	N	Agri.	Agri.	D	
2. Crooked Creek	WF	N	Agri.	Agri.	D	
3. Northeast Creek	WF	N	Fishing	Fishing	C	
a. Burdon Creek	WF	N	Fishing	Fishing	C	
(1) Buck Branch	WF	N	Fishing	Fishing	C	
b. Kit Creek	WF	N	Fishing	Fishing	C	
c. Panther Creek	WF	N	Fishing	Fishing	C	
(1) Nancy Branch	WF	N	Fishing	Fishing	C	
(2) Morris Branch	WF	N	Fishing	Fishing	C	
4. Indian Creek	WF	N	Fishing	Fishing	C	
5. Lick Branch	WF	N	Fishing	Fishing	C	
G. New Hope River (mouth of Morgan Creek) to Haw River	WF	N	Fishing	Fishing	C	
1. Morgan Creek to Dam at University Lake.	WF	N	WS	WS	A-II	Chapel Hill watershed.
a. Phils Creek	WF	N	WS	WS	A-II	"
(1) Neville Creek	WF	N	WS	WS	A-II	"

RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Pro- posed Class	Comments
b. Mill Creek	WF	N	WS	WS	A-II	Chapel Hill watershed.
(1) Cumbo Branch	WF	N	WS	WS	A-II	"
(2) Price Creek	WF	N	WS	WS	A-II	"
(a) West Prong Price Creek.	WF	N	WS	WS	A-II	"
(b) East Prong Price Creek.	WF	N	WS	WS	A-II	"
2. Morgan Creek from Dam at Uni- versity Lake to New Hope River.	WF	P	Agri.	Agri.	D	Effluent from Chapel Hill's Morgan Creek sewage plant and Carrboro's sewage plant.
a. Wilson Creek	WF	N	Agri.	Agri.	D	
b. Meeting of the Waters	WF	N	Drainage	Drainage	D	
c. Chapel Creek	WF	N	Drainage	Drainage	D	
d. Cub Creek	WF	N	Agri.	Agri.	D	
3. Bush Creek	WF	N	Fishing	Fishing	C	
a. Aerndon Creek	WF	N	Fishing	Fishing	C	
(1) Jones Branch	WF	N	Fishing	Fishing	C	
b. Overcap Creek	WF	N	Fishing	Fishing	C	
4. Beartree Creek	WF	N	Agri.	Agri.	D	
5. Whiteoak Creek	WF	N	Agri.	Agri.	D	
a. Bachelor Branch	WF	N	Agri.	Agri.	D	
b. Jack Branch	WF	N	Agri.	Agri.	D	
c. Clark Branch	WF	N	Agri.	Agri.	D	

TABLE 8
RECOMMENDED CLASSIFICATIONS
HAW RIVER DRAINAGE AREA

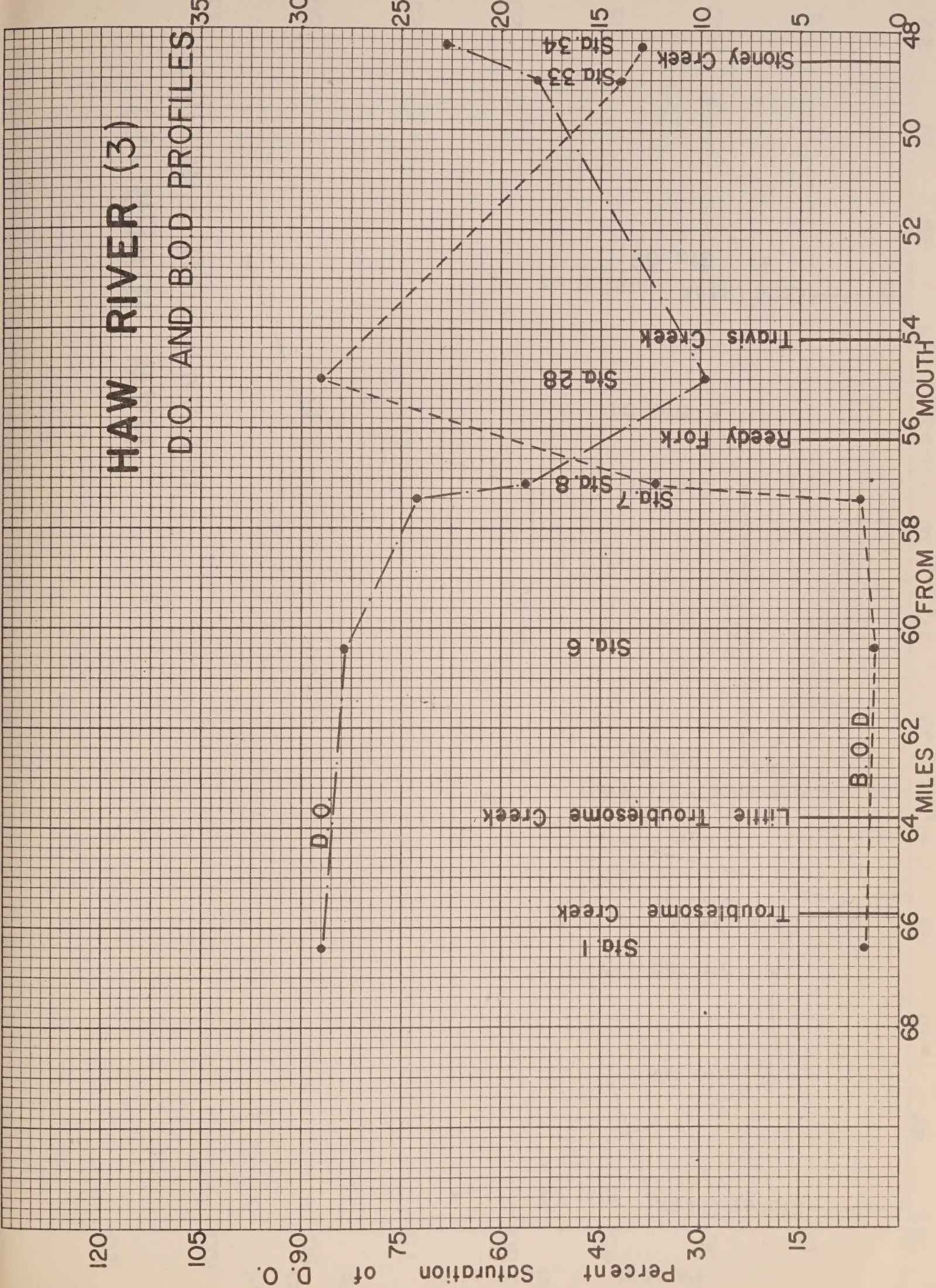
Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
d. Rocky Fork	WF	N	Agri.	Agri.	D	
e. Pitts Creek	WF	N	Agri.	Agri.	D	
6. Parkers Creek	WF	N	Agri.	Agri.	D	
7. Beaver Creek	WF	N	Agri.	Agri.	D	
a. Unnamed Tributary near Apex.	WF	P	Agri.	Agri.	D	Effluent from Apex West side sewage plant.
b. Reedy Branch	WF	N	Agri.	Agri.	D	
c. Little Beaver Creek	WF	N	Agri.	Agri.	D	
d. Weaver Creek	WF	N	Agri.	Agri.	D	
H. Shaddox Creek	W	SP	Agri.	Agri.	D	Carolina Power & Light Company Cape Fear Steam Station's ash settling pond effluent.

HAW RIVER (3)

D.O. AND B.O.D. PROFILES

Average 5 Day 20°C B. O. D. ppm

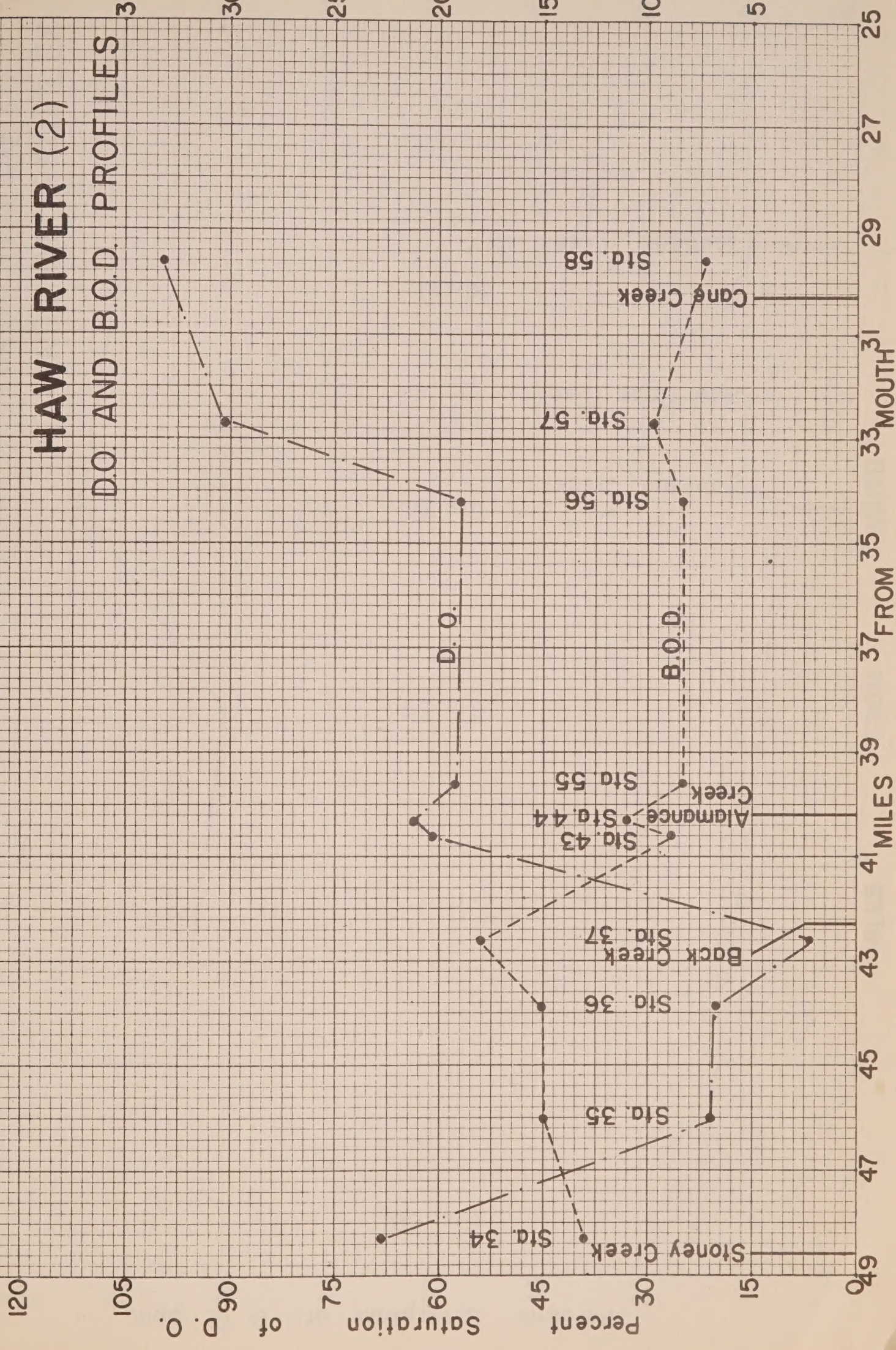
141



HAW RIVER (2)

DO AND B.O.D. PROFILES

Average 5 Day 20°C B.O.D. ppm



HAW RIVER (I)

D.O. AND B.O.D. PROFILES

Average 5 Day 20° C B.O.D. ppm 145

120

105

ppm

D.O.

of

Saturation

Percent

30

15

30

Sta. 58

Sta. 59

Sta. 60

Sta. 91

Shaddox Creek

New Hope River

Robeson Creek

MOUTH

FROM

MILES

24

27

30

30

B.O.D.

D.O.

0

3

6

9

12

15

18

21

24

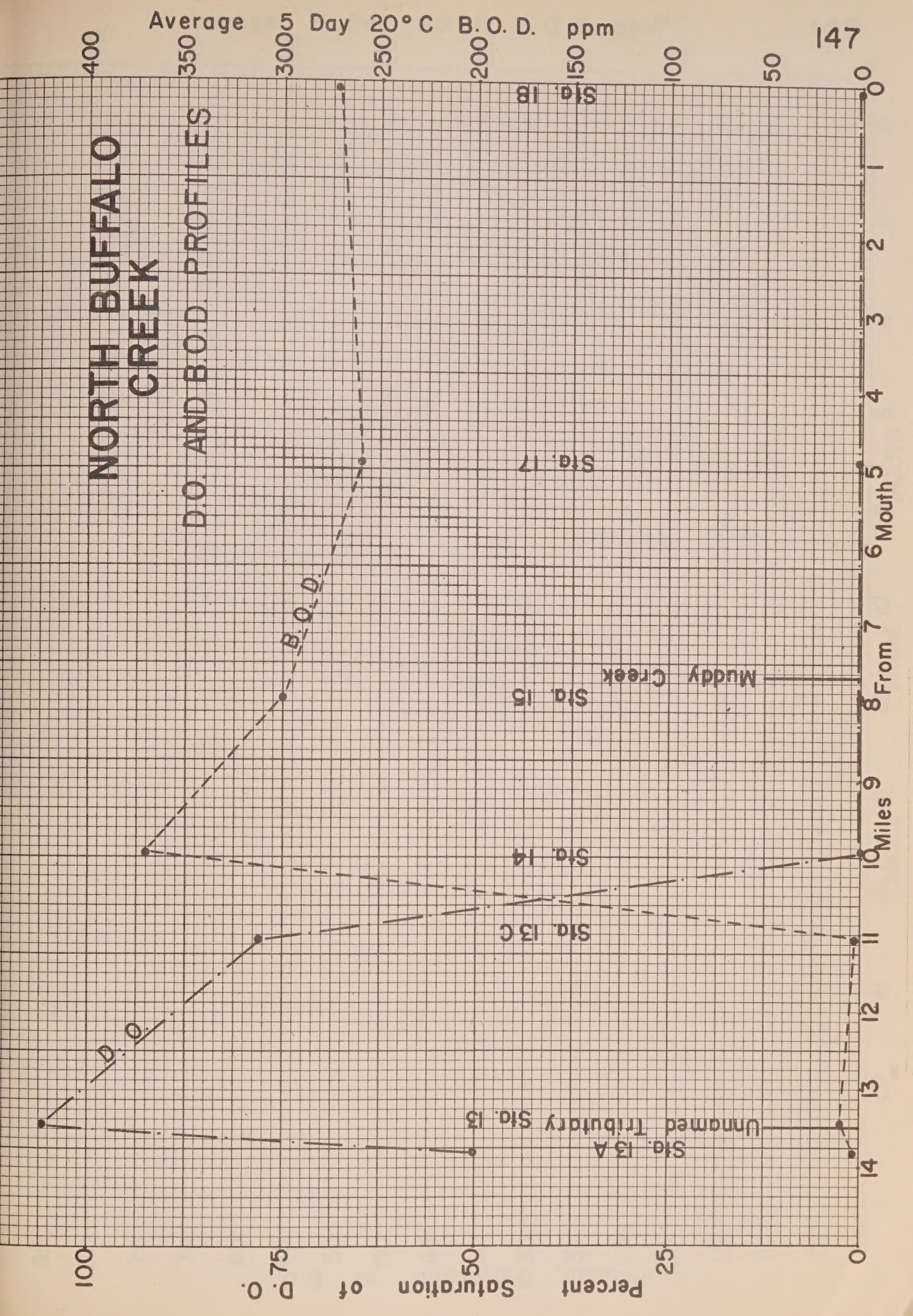
27

30

30

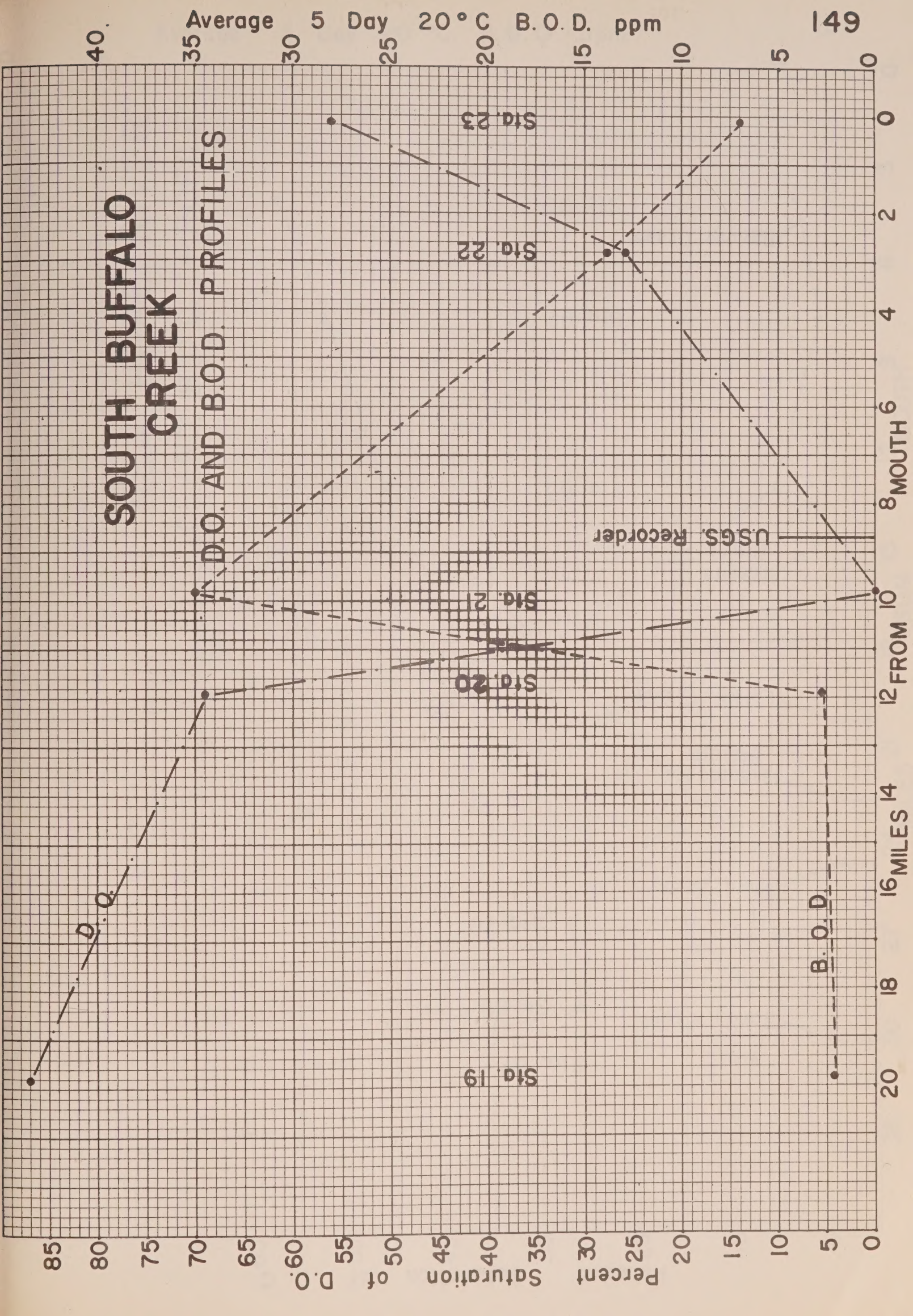
NORTH BUFFALO CREEK

D.O. AND B.O.D. PROFILES



SOUTH BUFFALO CREEK

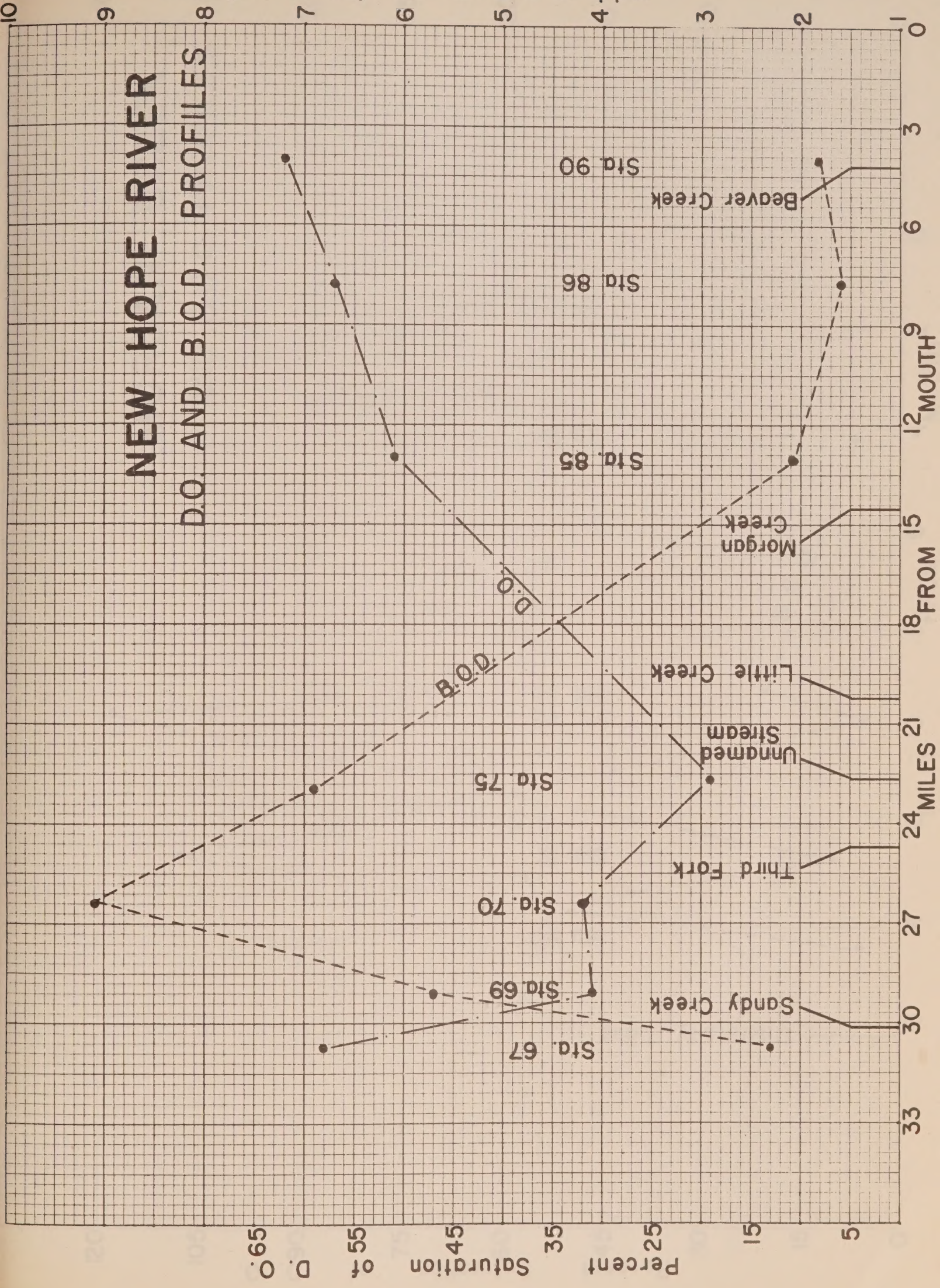
D.O. AND B.O.D. PROFILES



Average 5 Day 20 °C. B.O.D. ppm

NEW HOPE RIVER

D.O. AND B.O.D. PROFILES

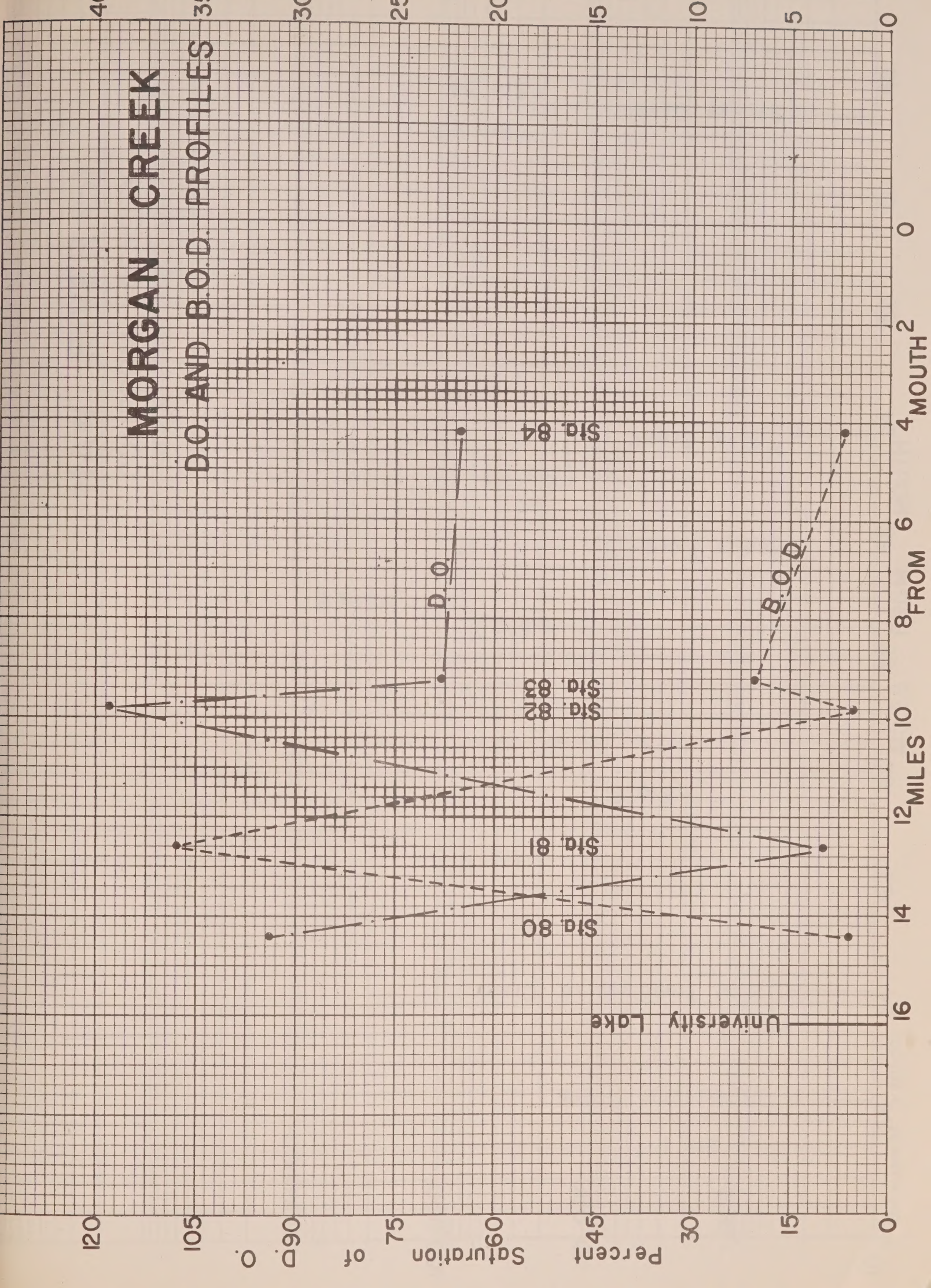


MORGAN CREEK

Average 5 Day 20 °C B.O.D. ppm

153

D.O. AND B.O.D. PROFILES



HAW RIVER (3)

COLIFORM DENSITY

MPN Per 100 ML

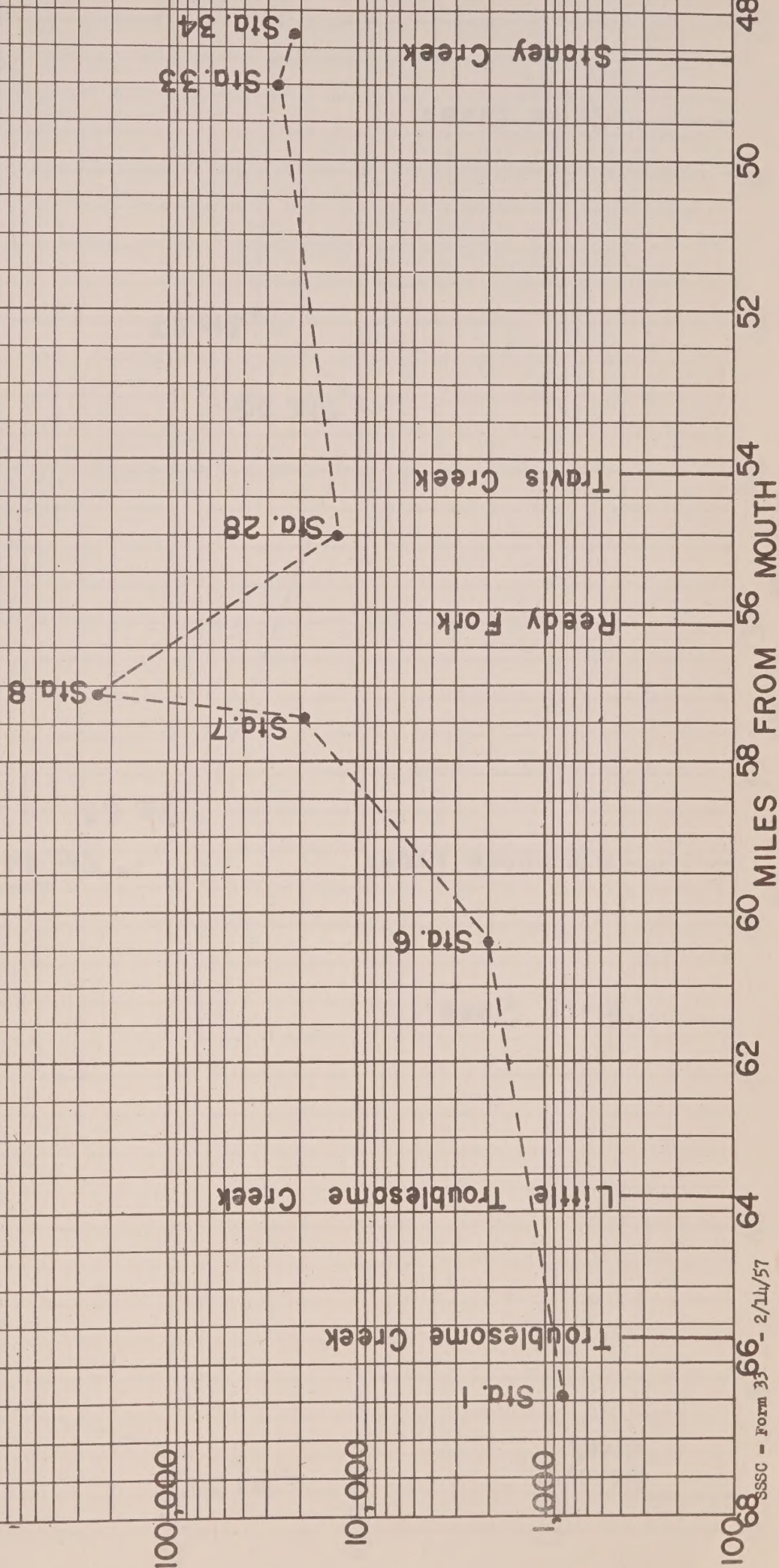
1,000,000

100,000

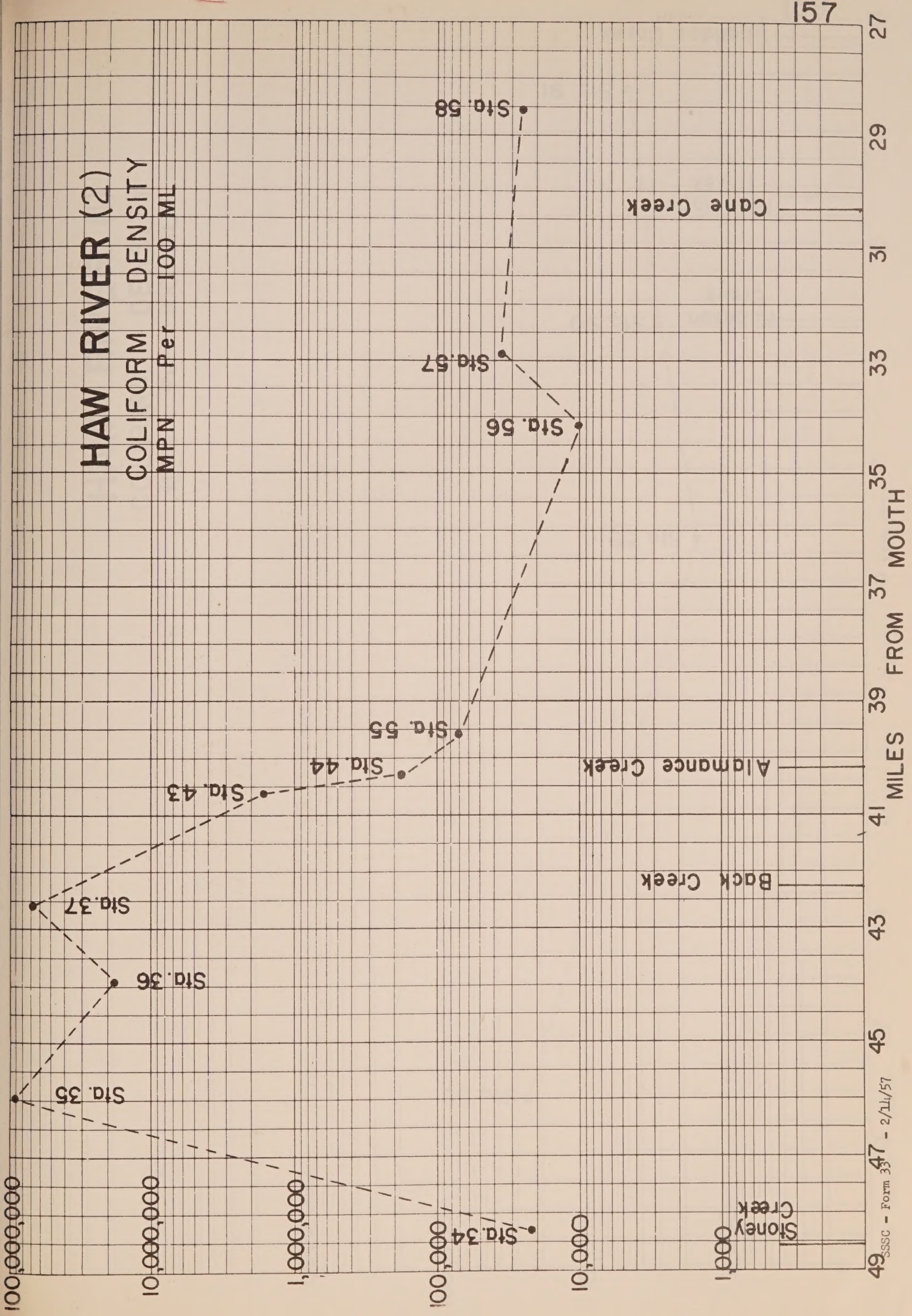
10,000

1,000

100



HAW RIVER (2) COLIFORM DENSITY MPN Per 100 ML



HAW RIVER (II) COLIFORM DENSITY MPN Per 100 ML

MPN Per 100 ML

1,000,000

100,000

10,000

1,000

Sta. 58

Sta. 59

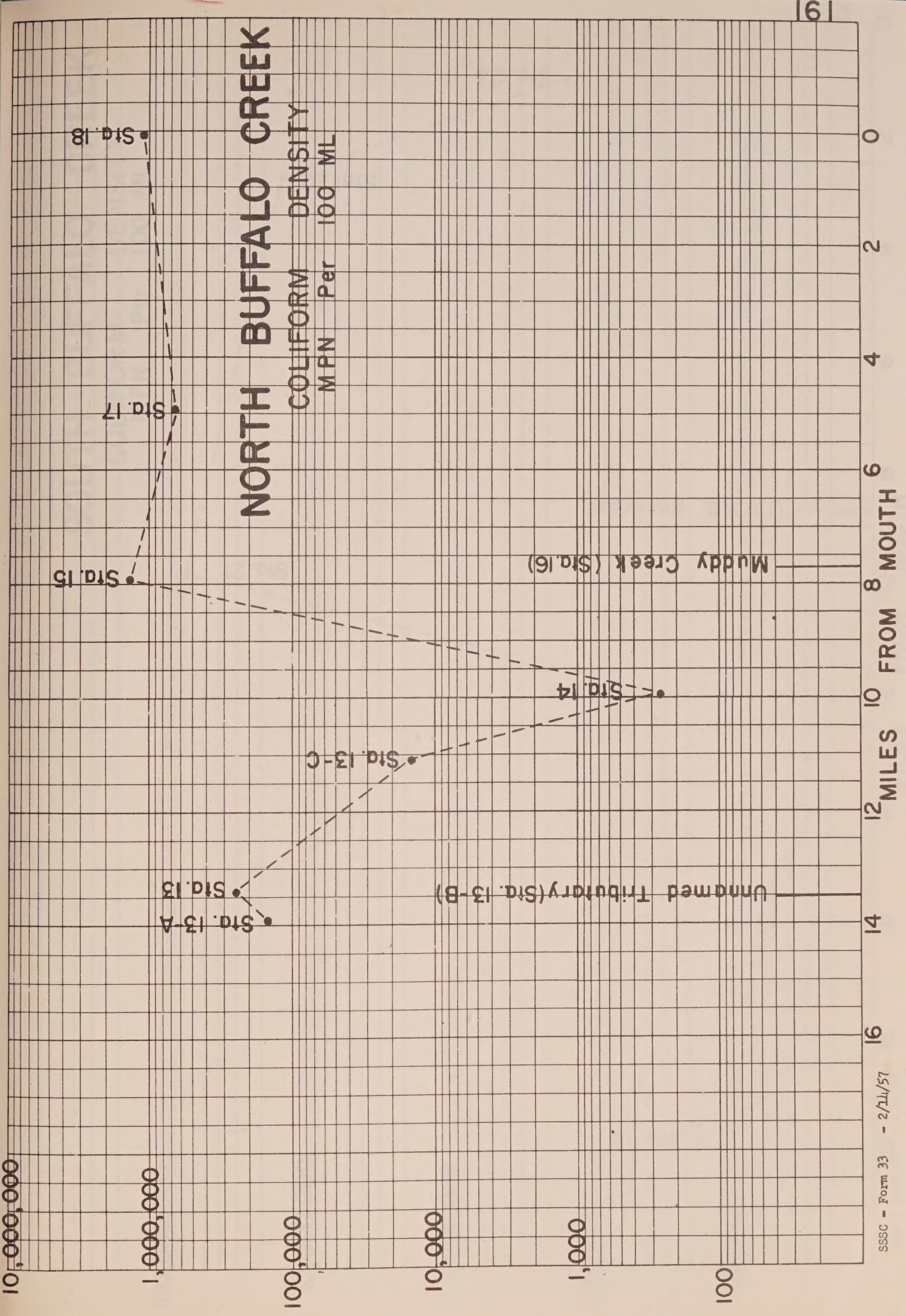
Sta. 90

Sta. 91

New Hope River

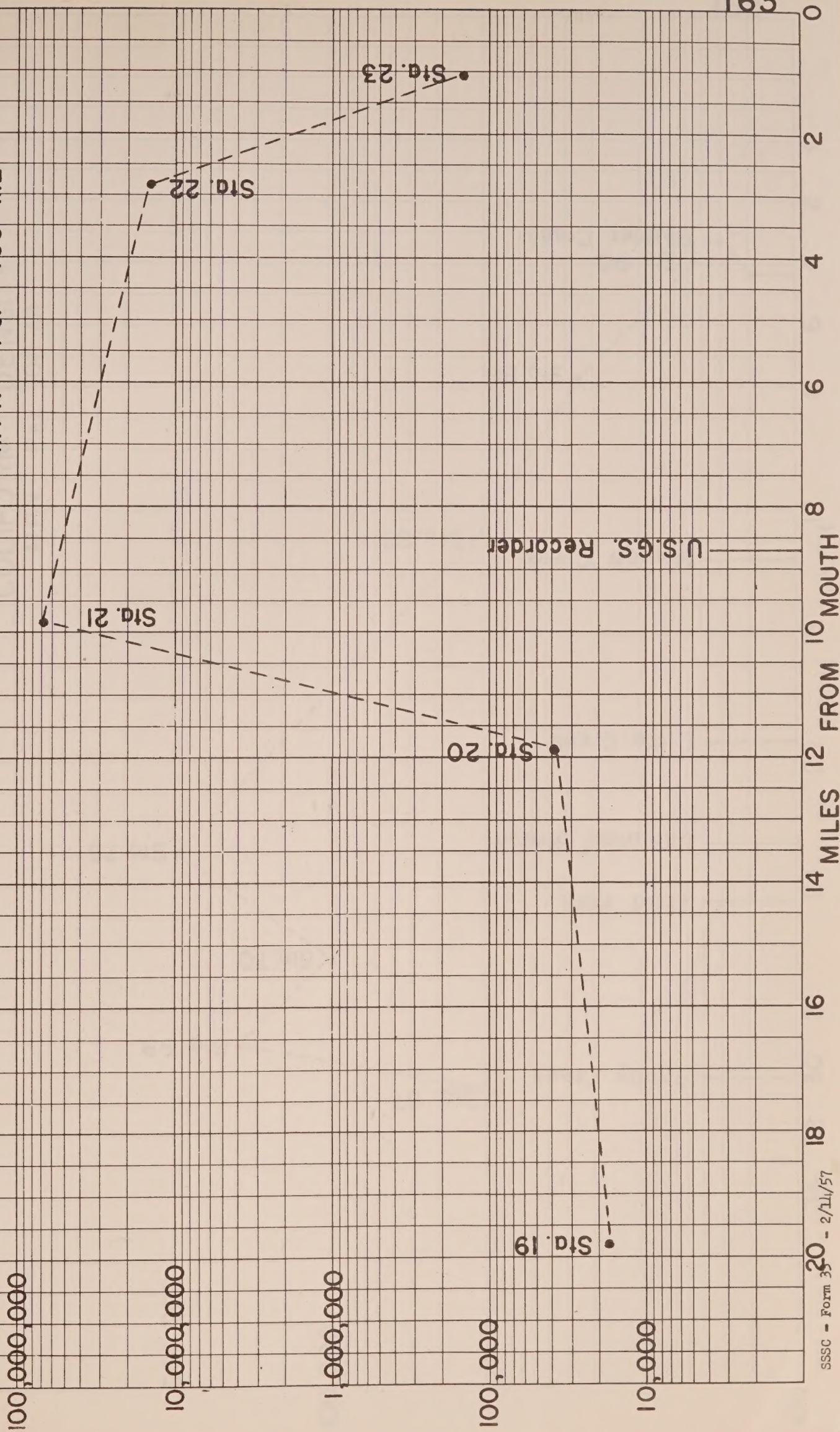
Robeson Creek

Shaddox Creek



SOUTH BUFFALO CREEK

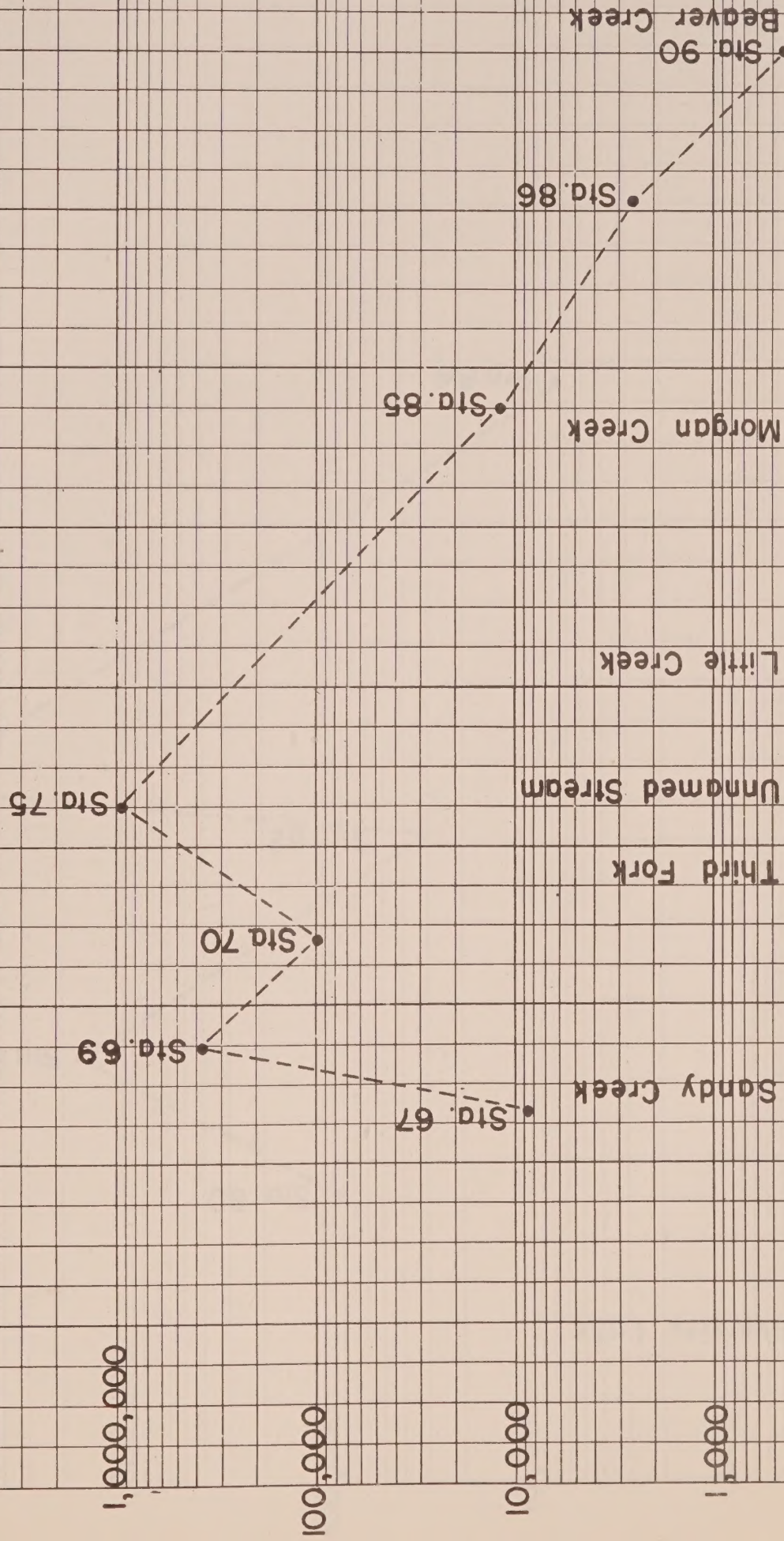
COLIFORM
MPN Per
DENSITY
100 ML



NEW HOPE RIVER

COLIFORM DENSITY

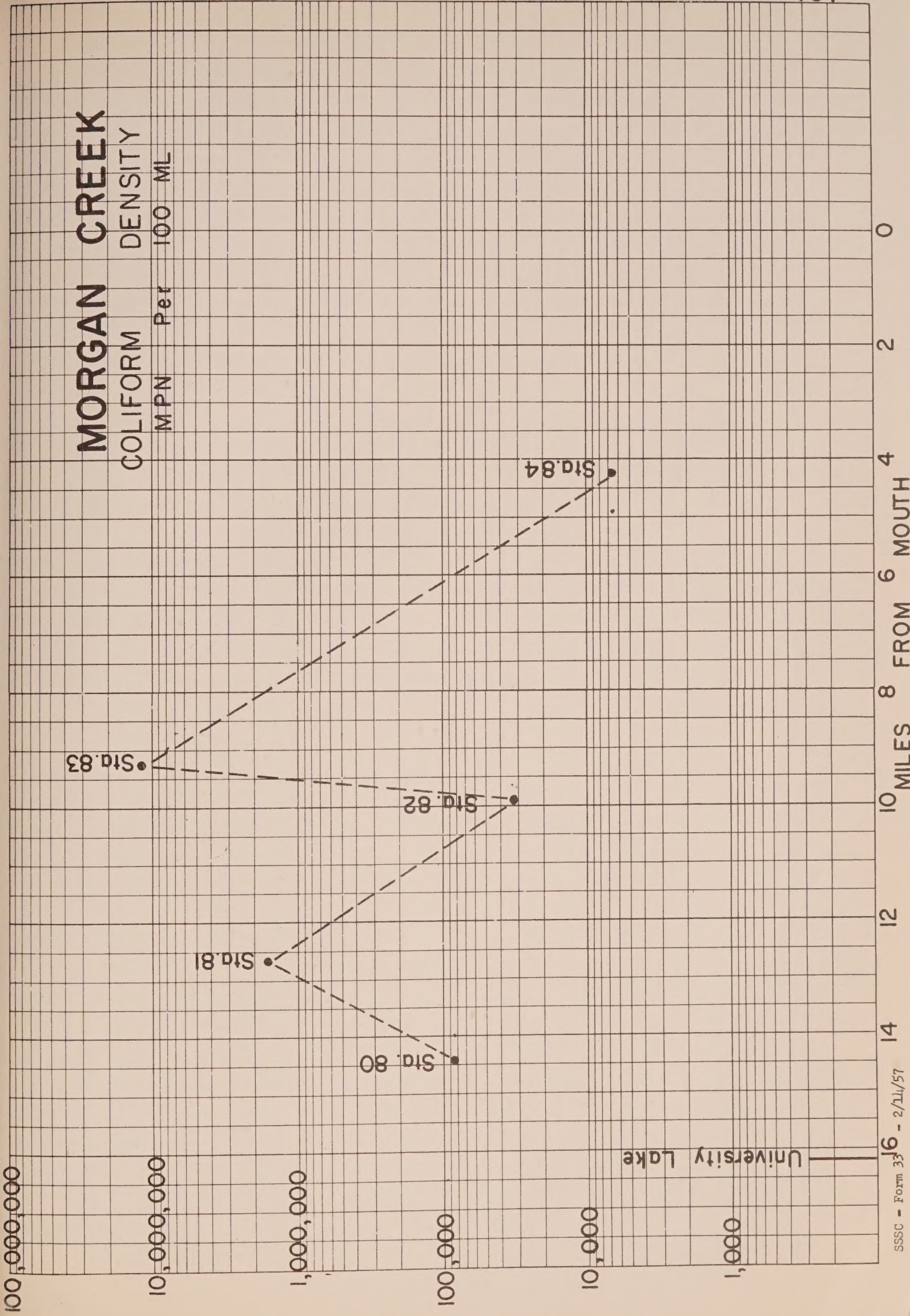
MPN Per 100 ML



MORGAN CREEK

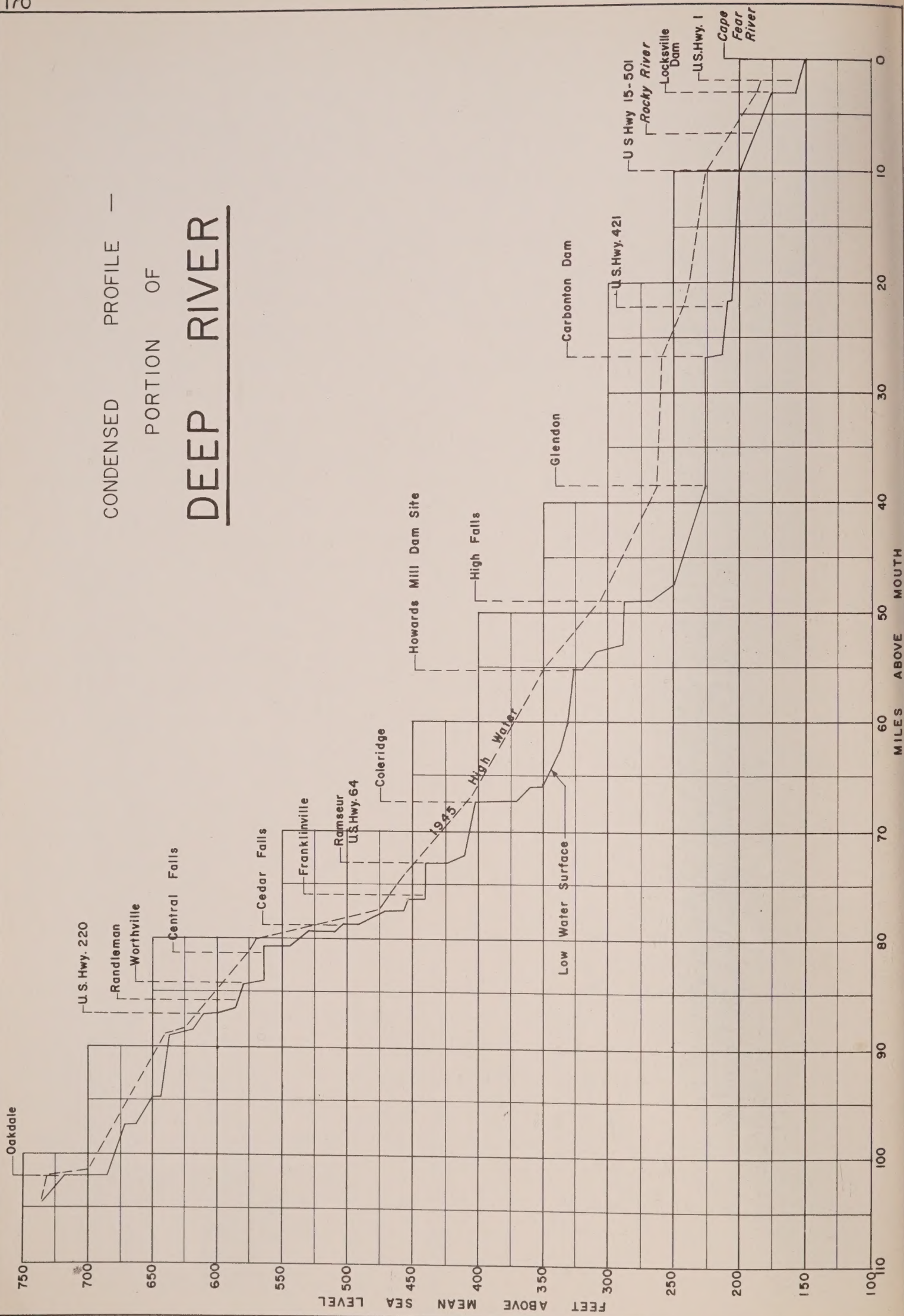
COLIFORM
MPN Per 100 ML

DENSITY



University Lake

CONDENSED PROFILE —
PORTION OF
DEEP RIVER



SECTION II - DEEP RIVER DRAINAGE AREA

GENERAL DESCRIPTION

This section of the report is concerned with the Deep River and its tributaries and will be referred to throughout the report as the Deep River Drainage Area.

Deep River is the southernmost of the two large streams that comprise the headwaters of the Cape Fear River. Deep River, like Haw River, has its origin in Guilford and Forsyth Counties. It flows from its source in a southerly direction to the northern part of Moore County and thence northeast to its junction with Haw River at the Chatham-Lee County Line to form the main stem of the Cape Fear River.

Rocky River, which has its source in the northeast corner of Randolph County, is the only major tributary to Deep River. From its source it flows in a southeasterly direction to join Deep River 6.9 miles from its mouth. Other smaller tributaries include Polecat Creek, Brush Creek, Sandy Creek, Richland Creek, Bear Creek, and McLendons Creek.

The drainage area is made up of portions of eight counties having an estimated total area of 1,442 square miles. The following tabulation gives the estimated area of each county together with the area of each lying within the Deep River Drainage Area:

<u>County</u>	<u>Total Area</u> <u>(Sq. Miles)</u>	<u>Est. Area</u> <u>In Basin</u> <u>(Sq. Miles)</u>
Alamance	434	8
Chatham	707	378
Forsyth	424	7
Guilford	651	149
Lee	255	70
Montgomery	488	31
Moore	672	336
Randolph	801	463
	<u>4,432</u>	<u>1,442</u>

Topography

The Deep River Drainage Area is wholly within the Piedmont Plateau region of the State; however, the fall line lies approximately at its confluence with the Haw River. The river has a rather sharp fall until it nears the fall line and flows into the upper coastal plains region. From the base of the dam at the High Point Municipal Lake to the mouth of the river, a distance of 103 miles, the river falls 572 feet, a rate of 5.6 feet per mile of river. The fall is rather rapid down to the mouth of McLendons Creek where it begins to flatten out.

In Randolph and Guilford Counties the terrain is somewhat hilly and rolling whereas it becomes flat to gently rolling in Moore and Lee Counties with swampy areas in a few places. For most of the length of the river, there are rather high banks and very few large flood plains.

Cover and Climate

There are two highly developed areas in the Deep River Drainage Area. One of these is at the headwaters around High Point and the other is the area along the river and its tributaries in the vicinity of Randleman, Ramseur and Asheboro. The remainder of the land, with the exception of scattered areas, is not heavily populated. The chief present uses being made of the land are farming, timbering and livestock grazing. This drainage area has a smaller percentage of cleared land than that of the Haw River. Only about 60% of the total land area is cleared for farm use.

The area enjoys a rather moderate climate. The mean temperature, as indicated by reports from five stations in the area, was 60.0° F. during 1954, the year of the stream study. The long time mean for the years 1931-1952 was 60.2° F. This indicates that there is no extreme departure from the long time average. There were no extreme high or low temperatures during the study period. The snowfall and ice formations on the streams were negligible.

The average rainfall for the whole drainage area in 1954 was 47.1 inches. Like the mean temperature, this does not show any extreme departure from the long time average of 47.3 inches per year. The average for the year does not necessarily depict rainfall conditions prevailing during the period of the stream study. In fact, heavy rainfall was experienced during the early and latter part of the year, while during the summer of 1954 there were drought conditions over most of the drainage area. This is indicated by the falling, and sometimes dry, streams during the stream study. The variation of mean rainfall was from 44.7 inches at Asheboro to 52.1 inches at Moncure. The snowfall was too small to be of any importance.

Stream Flow

Throughout the Deep River Drainage Area, there were 75 gaging stations established to obtain stream flows in connection with the sampling program. Of these, there were six permanent and active stations maintained and operated by the United States Geological Survey. These stations are located: (1) West Fork Deep River near High Point, N. C.; (2) East Fork Deep River near High Point, N. C.; (3) Deep River near Randleman, N. C.; (4) Deep River at Ramseur, N. C.; (5) Bear Creek at Robbins, N. C., and (6) Deep River at Moncure, N. C.

Flow data for each of these stations are available through the District Office of the U. S. Geological Survey, Raleigh, N. C. Maximum, average and minimum flows and the exact location of the above-mentioned stations are listed below. The years for which records are available at each of these stations are also listed.

West Fork Deep River near High Point, N. C.

Water stage recorder and Parshall flume at altitude of 758 feet above sea level. Located at lat. 36° 00' 15", long. 79° 58' 42", on left bank 2,300 feet upstream from highway bridge and High Point Lake, 2.3 miles west of Jamestown and 2.5 miles northeast of High Point College, High Point, Guilford County. Drainage Area 32.1 sq. miles. Records available June 1923 to September 1926, July 1928 to September 1954. Minimum discharge 0.3 cfs., September 1, 1932. Average discharge for 29-year period 31.5 cfs., maximum discharge 8,450 cfs., September 24, 1947. Records good except for those above 25 cfs., which are fair.

East Fork Deep River near High Point, N. C.

Water stage recorder. Datum of gage is 764.02 feet above mean sea level. Located at lat. $36^{\circ} 02' 15''$, long. $79^{\circ} 56' 46''$, on left bank 5 feet upstream from highway bridge, 3.3 miles upstream from High Point Dam and 5.2 miles northeast of High Point College, High Point, Guilford County. Drainage Area 14.2 sq. miles. Records available July 1928 to September 1954. Minimum discharge 0.7 cfs. September 22, 1941 (result of temporary regulation); Minimum unregulated, 1.2 cfs. September 25, 1941. Average discharge for 26 year period 14.7 cfs. Maximum discharge 6,300 cfs. September 24, 1957. Records fair. Occasional temporary regulation of unknown origin during low flow in some water years.

Deep River near Randleman, N. C.

Water stage recorder. Datum of gage 638.11 feet above mean sea level. Located at lat. $35^{\circ} 54' 10''$, long. $79^{\circ} 51' 15''$ on left bank 500 feet downstream from highway bridge, a quarter of a mile downstream from Coltrane's Mill, half a mile south of Guilford County line, $4 \frac{3}{4}$ miles upstream from Muddy Creek and 7 miles north of Randleman, Randolph County. Drainage area 124 sq. miles. Records available October 1928 to September 1954. Minimum discharge 0.5 cfs. November 28, 1931. Average discharge for 26 year period 118 cfs. Maximum discharge 20,000 cfs. September 25, 1947. Records good except for periods of no gage-height record, which are poor. Large diurnal fluctuations at low flow caused by Coltrane's Mill. Flow slightly regulated by High Point Lake (total capacity 5.064 acre-feet). City of High Point diverts water for municipal water supply and discharges part of the sewage effluent into Rich Fork Creek in Pee Dee River Basin.

Deep River at Ramseur, N. C.

Water stage recorder. Datum of gage is 419.50 feet above mean sea level. Located at lat. $35^{\circ} 44'$, long. $79^{\circ} 39'$ on right bank 1,600 feet downstream from railroad station at Ramseur, Randolph County, and $1\frac{1}{2}$ miles downstream from Sandy Creek. Drainage area 346 sq. miles. Records available November 1922 to September 1954. Minimum discharge 0.4 cfs. May 27, November 28, 29, 1941. Average discharge for 32 period 344 cfs. Maximum discharge 43,000 cfs. September 18, 1945. Records good except those for periods of no gage-height record, which are poor. Large diurnal fluctuations caused by power plants above station. Flow regulated by High Point Lake and small power plant reservoirs. Town of Asheboro obtains municipal water supply from Yadkin River Basin and discharges sewage into Deep River Drainage Area above this station.

Bear Creek at Robbins, N. C.

Water stage recorder. Datum of gage is 323.23 feet above mean sea level. Located at lat. $35^{\circ} 26'$, long. $79^{\circ} 36'$ on right bank 300 feet downstream from Cabin Creek and half a mile west of Robbins, Moore County. Drainage area 134 sq. miles. Records available November 1939 to September 1954. Minimum discharge, no flow October 2, 22-27, 1941. Average discharge for 15 year period 141 cfs. Maximum discharge 27,000 cfs. September 18, 1945. Records fair except for those of period of no gage-height record, which are poor. Diversion of approximately 300,000 gallons daily from gage pool for municipal water supply for Town of Robbins included in these records.

Deep River at Moncure, N. C.

Water stage recorder. Datum of gage is 185.88 feet above mean sea level. Located at lat. $35^{\circ} 36'$, long. $79^{\circ} 05'$ on right bank $1\frac{1}{2}$ miles northwest of Moncure, Chatham County, $2\frac{1}{4}$ miles downstream from Rocky River and $4\frac{1}{2}$ miles upstream from confluence with Haw River. Drainage area 1,410 sq. miles, approximately. Records available May 1898 to December 1899, July 1930 to September 1954. Minimum flow 9 cfs. November 11, 1941. Average flow for 25 year period 1,450 cfs. Maximum discharge 80,300 cfs. September 18, 1945. Records good above 250 cfs. and fair below except those of periods of no gage-height record, which are poor. Diurnal fluctuation and considerable regulation at low flow caused by small power plants above station.

ECONOMIC DEVELOPMENT

Population

According to the census taken in 1950, the estimated population of the Deep River Drainage Area was 136,000. There was an increase of 15% over the 1940 census of 118,000. This compares very favorably with the percentage increase for the State of 13.7%. There are very few highly developed areas in this section. The only municipalities of over 10,000 population are High Point and Sanford.

The textile industry is probably the most important in the Deep River Drainage Area. Concentrations of textile mills can be found in Asheboro, Liberty, Sanford and High Point as well as individual but important mills scattered throughout the area. Other important industries found throughout the area are furniture manufacturing with its center in High Point and the manufacturing of bricks and tile with its center in Moore and Lee Counties. This area is also important for its agriculture.

The per capita income for this section of the Cape Fear River has been estimated to be \$1,160 from a survey made of the State in 1955. The total farm income for the same year was \$48,631,000, while the total effective income for the drainage area was \$493,603,000. In comparison to the above figure, a similar survey made in 1947 showed that there were 831 establishments manufacturing goods that had a total value of \$182,485,000. Although all of the counties are only partially within the drainage area, the above figures represent the total for all of the counties other than Alamance and Forsyth which have been omitted since only 2% of their area is in this drainage area.

Electric Power

Electric power for the Deep River Drainage Area is supplied by two major companies. The upper section is supplied by Duke Power Company while power for the lower section is supplied by Carolina Power and Light Company which operates two small hydroelectric power stations near the mouth of the river. Industry has installed many small hydroelectric power plants along the river which, because of its sharp profile, lends itself to this usage. Two of these, the Carbonton and Lockville installations, which are owned by the Carolina Power & Light Company, are still in operation and each has a capacity of 100 KW.

In addition to these there are numerous smaller dams, some used for power and some abandoned, scattered along the river. They are located as follows: three between High Point Lake Dam and polecat Creek, one at Worthville, three near Central Falls, two at Franklinville, one at Ramseur, one at Coleridge and one at High Falls. There are also dams on tributaries as follows: three on Polecat Creek near Randleman, one on Sandy Creek near Ramseur and three on Rocky Creek near Siler City.

Forest Resources

Approximately 68% of the total area within the Deep River watershed is forest land. Approximately 50,000 acres of this is public owned lands while the remainder is privately owned. Below is a tabulation of forest uses as published in "Forest Statistics for Southern Coastal Plain of North Carolina,

1952 - Forest Survey Release No. 41" and "Forest Statistics for the Piedmont of North Carolina, 1956 - Forest Survey Release No. 48". All counties are only partially within the drainage area, but the following figures are totals for the counties listed:

<u>County</u>	<u>Total Forest Lands (Acres)</u>	<u>Public Forest Lands (Acres)</u>	<u>Pulpwood Production 1955-Standard Cords</u>	<u>Saw Timber in Million Board Feet</u>
Chatham	354,500	1,700	26,251	947.9
Guilford	177,000	4,600	890	488.8
Lee	121,700	0	13,108	169.7
Montgomery	251,400	33,700	13,077	471.8
Moore	323,700	1,300	13,093	621.5
Randolph	<u>336,100</u>	<u>8,700</u>	<u>4,564</u>	<u>540.4</u>
Total	1,564,400	50,000	70,983	3,240.1

Agriculture

The Deep River Drainage Area as a whole is rural. There are a few heavy concentrations of population scattered throughout the area but many of these spill over into other drainage areas and even other river basins. All counties within the drainage area showed a decrease in average farm size except Lee County which showed an increase of 2.9 acres per farm. The average farm size was 85.2 acres in 1954, while the average size in 1950 was 87.6 acres. This indicates that there is some trend toward moving to the city, but it also indicates that the trend is not as strong in the Deep River Drainage Area as it is in the more industrialized Haw River Drainage Area. Although the farms are smaller, there is evidence of more machinery, farm ponds, irrigation and other labor saving devices. The chief money crop is tobacco, although the southern section of the area is in the sandhills section and produces many peaches. Montgomery, Moore and Lee Counties reported a total of 444,060 peach trees in 1954. The figures below were obtained from the 1954 census of agriculture by the U. S. Department of Commerce.

<u>County</u>	<u>No. of Farms</u>	<u>Acres Harvested</u>	<u>Land Under Irrigation (Acres)</u>	<u>Cash Value of Principal Crops 1954</u>
Chatham	2,844	48,797	144	\$ 3,847,710
Guilford	4,518	79,338	619	11,023,850
Lee	1,500	24,040	416	4,979,370
Montgomery	995	23,295	489	1,550,800
Moore	2,328	41,069	309	5,543,650
Randolph	<u>3,578</u>	<u>65,658</u>	<u>158</u>	<u>4,941,350</u>
Total	15,763	282,197	2,135	\$31,886,730

Dairy, Livestock and Poultry

Livestock and dairy production is one of the minor industries in the area. The climate, soil, and in some places the terrain are very suitable for producing hay crops which are needed in this type of occupation. The following tabulation taken from the 1954 census of agriculture by the U. S. Department of Commerce will show the extent of this type of occupation in the drainage area.

<u>County</u>	<u>Cattle & Calves</u> <u>Sold Alive</u>	<u>Chickens</u> <u>Sold</u>	<u>Hogs and Pigs</u> <u>Sold Alive</u>
Chatham	7,198	6,206,528	680
Guilford	7,727	428,923	7,322
Lee	1,033	271,134	1,696
Montgomery	837	1,368,463	2,465
Moore	1,256	4,142,058	3,833
Randolph	<u>6,385</u>	<u>3,945,088</u>	<u>7,676</u>
Total	24,436	16,362,194	23,672

Mineral Resources

The Deep River Drainage Area contains two of the many geological series in the State, the Triassic series and the Carboniferous series, each of which contains useful deposits of metals and non-metals.

This section of the State is not very rich in usable metals. Many types of metals are found but they are in such small quantities that it is not practicable to mine them commercially. Some of these metals which are found in larger quantities are copper, iron and titanium. Copper is found in very small quantities in Guilford, Randolph, Moore and Montgomery Counties in three forms; chalcocite, chalcopyrite, and bornite. Iron has been mined in the form of siderite along with coal in the Deep River coal field in Lee, Chatham and Moore Counties. Another iron ore is found in the form of titaniferous magnetite. The iron content of this material is so small that it is unimportant as iron ore, but it contains enough titanium to make its mining useful.

There are many different forms of the non-metals mined in the Deep River Drainage Area. A small deposit of emery has been found in Guilford County. Only one class of precious stones is available. This is garnet, found in small quantities throughout the entire Piedmont area. Probably the most useful and most plentiful of the non-metals are brick and pottery clays and shales. These are most prominent in Lee and Moore Counties where there are several brick and tile manufacturing companies. Large quantities of sand, gravel and large building stone are available in the area. Coal was once mined commercially along the Deep River near the Lee - Chatham County line, but this operation has now been abandoned.

Fish and Wildlife

Along the upper section of Deep River there is little or no evidence of any fishing. Most of the fishing in the drainage area is done in the lower section of the river and along the larger tributaries. Many of the tributaries become too shallow in the summer to support fish life while others are too polluted. This section, however, is not entirely without its sport fishing. While fish are not plentiful, the lower portion of Deep River and many of its tributaries in Chatham, Lee and Moore Counties support bream, bass, catfish, suckers and carp and smaller numbers of white perch, robbin, and jack. Fish kills have been reported in the vicinity of Carbonton dam, Glendon and Ramseur, all on the Deep River. Although hunting is a minor sport in the area, game is available for individual hunts or small hunting parties. Most of the game are of the small variety such as quail, turkey and squirrel. Deer is the only large game available.

Recreation

There are no state parks or state-owned recreational areas within the Deep River watershed. The only two privately owned camps are listed below:

Guilford County

Camp Douglas Long, owned and operated by colored Girl Scouts, is located on Hickory Creek northwest of High Point. Facilities are provided for 150 campers per week. The camp's water supply is obtained from a well while a septic tank and nitrification field are provided for sewage disposal. An artificial lake is used for swimming.

Randolph County

Camp Nawakwa, now owned by the Methodist Churches of Guilford County, is located on Polecat Creek near Randleman. The camp provides facilities for 80 boys per day. The camp's water supply is obtained from a well and sewage is disposed of by pit privies. The camp has two impoundments, one on Polecat Creek and one on Bull Run which provide recreation in the form of swimming and boating. Bull Run is used for swimming.

Transportation

The Deep River Drainage Area has an extensive network of highways which provide excellent transportation facilities to serve all centers of population, particularly the City of High Point. The main North-South arteries include U. S. Highways 1, 15, 501, 421, and 220. The main East-West artery is U. S. Highway 64 that passes through Asheboro and Siler City in the middle of the area. There are also many State Highways and numerous improved secondary roads serving the rural areas.

The three principal railroads serving the area are: the Southern, the Seaboard Airline and the Norfolk and Southern Railroad Companies.

The Greensboro - High Point Airport, served by all of the major airlines in the State, is the only major air terminal in the area; however, both Asheboro and Siler City have municipal airports.

Because of the shallow waters and series of dams along the Deep River, there is no segment of it navigable by large boats or barges.

GENERAL SURVEY FINDINGS

For convenience in presenting the survey findings relative to present and potential water and land usage, Deep River has been divided into three segments which are fairly well defined from the standpoint of usage and topographic characteristics. Significant water and land uses together with data relative to such uses are presented for each segment. These data are also summarized in Table No. 10, Public Surface Water Supplies; Table No. 11, Industrial Surface Water Supplies; Table No. 12, Public Ground Water Supplies; Table No. 13, Industrial Ground Water Supplies; Table No. 14, Points of Significant Sources of Pollution; and Table No. 16, Recommended Classifications.

SEGMENT I. DEEP RIVER AND ITS TRIBUTARIES FROM SOURCE TO
OAKDALE COTTON MILLS, INC. WATER SUPPLY INTAKE

This segment of the river includes one of the most highly developed portions of the Deep River Drainage Area. (Because it is the headwaters of the river, it is also one of the most important segments of the stream.) Fast Fork Deep River flows directly south from the western suburbs of Greensboro, joins West Fork Deep River, which drains the northeastern section of High Point and its suburbs, and forms High Point Municipal Lake. There were three significant sources of pollution in this segment of the river at the time of the survey. There are two public water supplies in this area. The City of High Point obtains its raw water supply from Municipal Lake which, after treatment, is used for both domestic and industrial purposes at an average rate of approximately 4.7 M.G.D. The treatment consists of coagulation with alum, sedimentation, filtration, post chlorination and the addition of lime and ammonia. The Oakdale Cotton Mills, Inc., operate a water plant that supplies industrial water for its own use and water for domestic purposes in Jamestown. This water is pre-chlorinated, coagulated, settled, filtered and treated with lime. The intake is approximately 2.5 miles downstream from High Point Dam. There is no organized bathing in this segment. The points of pollution are as follows:

Ward Baking Company discharges domestic sewage from approximately 100 employees on three shifts. This waste is given complete treatment through a plant consisting of a septic tank and sand filter. The effluent, clear in appearance, flows through a small ditch for 0.7 mile before it enters Deep River above the intake of the Jamestown public water supply.

Jamestown High School has an average enrollment of 1,200 pupils and teachers. The school provides a lunchroom from which kitchen wastes were discharged in 1954, without treatment, into a ditch 0.2 of a mile above its junction with Deep River. The domestic wastes from the school are treated in five small treatment plants consisting of septic tanks followed by nitrification trenches. The nitrification field serving the largest septic tank appeared to be overloaded in 1954 to the extent that effluent was seeping into a small ditch that flows through the Highland Container Company property. Any drainage from the others flows through another ditch and enters Deep River above the Jamestown water supply intake.

Highland Container Company discharges domestic sewage from approximately 130 employees on two shifts. The sewage is treated in a plant consisting of a septic tank and sand filters which appeared to be functioning satisfactorily

in 1954. The effluent is discharged into a stream which also has seepage from the above referred to septic tank and nitrification field serving the Jamestown school. This ditch flows into the Deep River approximately one mile above the Jamestown water supply intake. The mill also has an industrial waste tank which consists of two 10,000 gallon tanks of starch which are emptied directly into the stream once or twice weekly. Enzymes are added to the starch in the holding tanks before discharge. This merely converts the starch into sugars, thus providing no B.O.D. reduction. The waste is discharged to the ditch receiving the effluent from the domestic sewage treatment facility.

Summary Discussion of Pollution in Segment I

Study of the 1954 analytical data shows that High Point Municipal Lake is a satisfactory source of raw water supply for this City when given complete treatment, including post-chlorination. On the other hand, the study shows that the raw water supply of the Oakdale Cotton Mills, Inc., used for domestic purposes by both the mill and the Town of Jamestown, cannot be considered satisfactory for this purpose unless the water is either given auxiliary treatment in addition to the usual treatment or the coliform bacteria are reduced in numbers as the water reaches the mill intake. In this connection, reference is made to page 14 of the report which defines the recommended criteria for rating raw water for public water supplies. The raw water supply of Oakdale Cotton Mills, Inc., is treated in conformance with the criteria established for waters described under Item (2) of The Most Probable Number (MPN) of Coliform Bacteria. However, examination of the data for Sampling Station 94 shows that the water failed during the months of June, July and August, 1954, to meet the criteria but, instead, fell under the criteria for waters described under Item (3). This calls for auxiliary treatment which is presently not provided. It is recommended in the first instance that the Jamestown High School treat all of its sewage and waste by subsurface methods and that the Highland Container Company provide adequate treatment for its starch waste which is believed to be a source of food supply for coliform bacteria, thus permitting a rapid growth under summer conditions. After these steps are taken, a series of samples should be collected at Sampling Station 94 and examined for coliform bacteria. If they continue to exceed the criteria under the above Item (2), either all sewage effluents should be adequately chlorinated or the mill should provide additional treatment for its raw water supply or obtain a new source free from pollution.

Further study of the 1954 analytical data shows that the water above the dam at High Point Municipal Lake was low in dissolved oxygen at a considerable depth below the surface but well saturated with dissolved oxygen at and near the surface. In 1954 the water below the dam was derived from an opening at the bottom of the dam. The settled clay in the lake caused the water to continuously have an apparent high color and high turbidity. While the dissolved oxygen was low as it left the bottom of the lake, it passed over a series of riffles and at Sampling Station 92, 400 feet downstream from the dam, it was fairly well saturated with dissolved oxygen.

SEGMENT II. DEEP RIVER AND ITS TRIBUTARIES FROM OAKDALE COTTON MILLS, INC. WATER SUPPLY INTAKE TO COX'S DAM NEAR CEDAR FALLS

This segment of the river is very highly developed; nevertheless, considerable areas are devoted to farm and timber lands although their coverage is not as extensive as in Segment III. The upper portion receives the drainage from Segment I and in part the drainage from the Cities of Greensboro and High Point while the drainage in the lower portion is largely from rural areas.

There are only two surface water supplies in this Segment. The Town of Randleman takes an average of 0.25 m.g.d. from Polecat Creek through an intake in an impoundment located just above its junction with Deep River. The Commonwealth Hosiery Company in Randleman uses an average of 20,000 g.p.d. from Simmons Branch for industrial purposes.

These waters are not used extensively for bathing and recreational purposes; however, an impoundment on Bull Run is utilized by Camp Nawaka for bathing while a second impoundment on Polecat Creek is used for boating and as a source of water supply for the bathing impoundment. In addition, Hickory Creek is used for bathing at Camp Douglas Long.

There are ten significant sources of pollution tributary to these waters which in many instances are resulting in conditions that seriously jeopardize existing necessary water uses. The total pollution load from the sewage and industrial waste discharges to the streams in this segment, prior to treatment, if any, and expressed as population equivalent (P.E.), based on 20° C 5-day B.O.D., is estimated to be 70,000 of which 33,000 is due to industrial discharges. The individual sources of pollution are discussed as follow:

Oakdale Cotton Mills, Inc., discharges an estimated 25,000 g.p.d. of untreated domestic sewage and dye waste through two outfalls into a canal immediately below the water supply dam of this Company at the north bank and thence into Deep River just above the adjacent highway bridge. The combined sewage and waste have a P.E. of 171.

Jamestown Cotton Mills, Inc., discharges an estimated 20,000 g.p.d. of untreated dye waste directly to Deep River below the bridge and diagonally across the river from the wastes from Oakdale Cotton Mills, Inc.

The discharges of wastes from these two mills are so close together as to preclude the separation of their effects upon Deep River. While the dissolved oxygen in the river water shows little effect from these waste discharges, as compared to the quantity immediately available above the dam, there is a marked increase in B.O.D. and in the numbers of coliform bacteria. In addition, the river for some distance downstream from the outfalls has varying colors, depending upon the dyes being used in the mills. These objectionable wastes create a nuisance which is aggravated by the fact that the water in Bull Run is not of the best quality with particular reference to the large numbers of coliform bacteria found in this stream. Bull Run drains part of Jamestown and the indications are that all of the local sewage disposal systems are not functioning properly. An engineering study should be made of the mill waste and sewage to determine the best means of treatment. Such a study should include an evaluation of the needs of Jamestown for a sewerage system and sewage treatment which might well be combined with the needs of the mills.

City of High Point - The sewage and industrial waste discharges from the sewerage system serving the City of High Point constitute the major source of pollution in the Deep River Drainage Area. The City is served by two separate sewage treatment plants; however, only the sewage and industrial wastes tributary to the Eastside plant are discharged to the waters of the Cape Fear River Basin. This plant provides secondary type treatment for the domestic sewage from a population of 27,000 plus industrial wastes having a population equivalent (P.E.) of 15,000. It discharges an effluent having a P.E. of about 14,000 into Richland Creek at a point approximately one mile above its junction with Deep River. The creek below the point of discharge is highly polluted as indicated by the fact that the stream below the outfall had an average B.O.D. of 10 ppm and a coliform bacteria content of 780,000 per 100 ml. The stream is also highly colored with dye wastes, contains extensive sludge deposits and has an offensive odor. The present sewage treatment plant is seriously overloaded and should be extensively enlarged and improved. In this connection, it should be noted that the City has employed a consulting engineering firm which is presently engaged in studying and planning necessary plant improvements.

Commonwealth Hosiery Company at Randleman discharges untreated domestic sewage and industrial waste into Deep River. The mill discharges an estimated 25,000 GPD of waste that has a total estimated P.E. of 502. This waste is significant in that it adds color to the stream and increases the coliform bacteria.

Cone Mills Corporation at Randleman discharges a nominal amount of raw domestic sewage having a P.E. of 63 into the river. The mill uses cold water dyes on goods for identification purposes from which there is little or no waste. Due to the large amount of dilution afforded by the river, this waste has very little influence on the oxygen assets of the stream, but does add greatly to the coliform bacteria present.

The Town of Randleman has a municipal sewerage system serving a population of 1,800 plus industrial waste having a P.E. of 938 from the Laughlin Hosiery Mill, making a total P.E. of 2,738. The plant consists of a very poorly operated Imhoff tank, preceded by a grit chamber and bar screen. The effluent from the sewage plant considerably increases the B.O.D. and coliform bacteria in the stream. A large number of coliform bacteria are still found in the river approximately two miles downstream. Secondary units should be provided and put into operation at this plant to give the river adequate protection. The plans for these improvements, if practicable, should include the collection and treatment of the sewage and/or waste from the Commonwealth Hosiery Company and the Cone Mills Corporation.

Leward Cotton Mills, Inc., at Worthville discharges to the Deep River approximately 7,500 g.p.d. of domestic sewage and industrial waste having an estimated P.E. of 99. The industrial waste consists only of residue from cleaning the slasher machine. Because of a slight rapid in the river just below the outfall, this waste causes a heavy white foamy film on the surface of the stream. The slasher waste should be segregated from the domestic sewage and disposed of in an absorption field while the domestic sewage should be treated by means of a septic tank and sand filter unit.

City of Asheboro - The sewerage system serving the City discharges wastes to the receiving streams through two outfalls. One of these discharges wastes to Penwood Branch after primary treatment in an Imhoff tank. The other

discharges wastes to Haskett Creek without treatment. Penwood Branch below the effluent from the sewage treatment plant has an average D.O. of less than 1 ppm, an average B.O.D. of 260 ppm and an average coliform bacteria content of 31,000,000 per 100 ml. The stream, which has very little natural flow, has a heavy gray color, high turbidity, and a strong sewage-like odor. The banks are covered with heavy sludge deposits and algae growth. This condition has improved very little approximately three miles downstream at the mouth of the branch. The B.O.D. reduction provided by the Imhoff tank is only 12 percent. The conditions in Haskett Creek below the point at which untreated sewage and industrial waste discharges resemble those described in Penwood Branch. Approximately one mile downstream from the outfall, the average D.O. is only 2 ppm, the B.O.D. is 120 ppm and the coliform content is 9,300,000 per 100 ml. The stream gives off a strong odor, possibly accounted for by the presence of 0.84 ppm of sulfides as an average in the stream. These streams have been the subject of many complaints from local people. The City has employed an engineer and is developing plans for new treatment facilities. Consideration should be given to including certain unsewered fringe areas in these plans.

North Asheboro-Central Falls Sanitary District has a sewerage system that presently includes only the domestic sewage from the Klopman Mills Division of Burlington Industries, Inc., and 25 houses in the vicinity of the mill. This sewage, which has a total P.E. of 200, is now partially treated in an inadequate Imhoff tank that is poorly maintained. The District has employed an engineer and is presently planning for a large expansion of its sewerage system which is to include appropriate treatment of the sewage and waste. This expanded system should include in the overall plan the present small system just described and all industrial waste in its area not already discharging to a public sewerage system.

Summary Discussion of Pollution in Segment II

Deep River below the pollution from Jamestown and its industries is highly colored by dye wastes and otherwise shows the effects of the discharges of untreated sewage and waste. While the river at Sampling Station 97 shows considerable improvement from the effects of these wastes, it shows a very marked deterioration below Richland Creek which is highly polluted by the partially treated sewage and waste discharged from the High Point Eastside Sewage and Industrial Waste Treatment Plant. The effects of the upstream pollution are still in evidence above the pollution from Randleman which places an additional burden upon the river. Penwood Branch is highly polluted with partially treated sewage and waste from Asheboro while Hasket Creek is seriously polluted by both this waste and large quantities of untreated sewage and industrial waste from this City. Deep River below Haskett Creek shows adverse effects from both the pollution in this creek and the pollution from Randleman, although good improvement is noted in river conditions above Franklinville. The City of Asheboro and the North Asheboro-Central Falls Sanitary District are to be commended for initiating studies designed to secure the improvement of the streams in their respective areas. However, these corrective measures should be carried out as rapidly as possible and those who have not initiated necessary action should do so immediately.

SEGMENT III DEEP RIVER AND ITS TRIBUTARIES FROM COX'S DAM NEAR
CEDAR FALLS TO JUNCTION WITH HAW RIVER

There are no large centers of population or industries in this portion of the Deep River Drainage Area; therefore, this segment of the river is less polluted than any other part. The main stem and Rocky River, its major tributary, comprise the most important fishing waters in the drainage area. The waters also serve as the source of four public water supplies as well as one industrial supply. The Town of Robbins obtains an average of 0.3 m.g.d. from Bear Creek at a point just downstream from the mouth of Cabin Creek. Siler City presently obtains an average of 0.75 m.g.d. of raw water from two reservoirs on Rocky River, with a third reservoir under construction, while the Town of Ramseur obtains 0.12 m.g.d. of raw water from Sandy Creek. All three municipalities employ conventional type modern plants in the treatment of their supplies. The Town of Carthage gets its raw water from two reservoirs which are fed by natural springs. One drains to Killet Creek while the other drains to Dunham Creek, tributary to the Cape Fear River. The water is treated with lime and chlorine before being discharged into the distribution system. The industrial process water for Randolph Mills at Franklinville is obtained in part from Deep River (95,000 g.p.d.) while 14,000 g.p.d. are obtained from wells.

An important use of a number of streams in this segment of Deep River Drainage Area is for the discharge of sewage and industrial wastes from nine municipal sewerage systems and seven industries at twenty-two different points. These wastes before treatment are estimated to be equivalent in strength to raw domestic sewage from a population of 33,000 which is reduced by treatment to a population equivalent (P.E.) of 19,000. These sources of pollution are described as follows:

Jordan Spinning Company at Cedar Falls discharges untreated domestic sewage with a P.E. of only 55 to Deep River. This is significant only from the standpoint of adding to the pollution load already present in the river which has not recovered fully from the effects of upstream pollution at this point. This could be completely removed by installing a septic tank with nitrification lines or a sand filter to handle the small volume of sewage involved.

Randolph Mills, Franklinville. This textile industry discharges approximately 109,000 g.p.d. of untreated sewage and industrial wastes either directly into Deep River or indirectly by a canal passing under the mills to the river. The industrial wastes consist largely of spent dyes which add considerable color and some B.O.D. to the receiving stream. The untreated sewage also adds B.O.D. and coliform (sewage) bacteria in large numbers. These untreated wastes and sewage further complicate the pollution picture by decreasing the dissolved oxygen in the stream to as little as 0.9 ppm. This condition undoubtedly contributed to a fish kill in 1957 in Deep River below these mills. The total pollution load from this source is estimated to have a P.E. of 4,674. The effluent from a small sewage treatment plant consisting of a septic tank and sand filter units serving the mill office, a store, a church, and seven residences is discharged to the river at a point a short distance upstream from the outfalls through which the untreated mill sewage and industrial wastes are discharged. The sand filters are grown over with weeds and the septic tank appears to be receiving little or no maintenance. It is essential that the sewage and wastes from the mills and the vicinity be treated to a degree sufficient to protect downstream uses.

The Town of Liberty has three sewage treatment plants receiving wastes having a total P.E. of 2,235. One plant is on Sandy Creek above the Ramseur water supply and the other two are in the Rocky River drainage area above the Siler City water supply. The Sandy Creek, or West Plant, consists of a bar rack, an Imhoff tank, and sand filters. The plant appeared to have received little or no maintenance. The filters were either clogged or unevenly graded and much of the sludge was merely thrown on the ground at the side of the bed. The Southwest Plant is similar to the West Plant in both construction and operation. The clogged bar rack caused raw sewage to overflow into the stream and the grounds were very unsightly at the time of several examinations. Sandy Creek below the West Plant shows the effects of the plant effluent. The dissolved oxygen is reduced and the B.O.D. is increased while the large numbers of coliform bacteria in the water pose a constant threat to the safety of the Ramseur water supply. The receiving stream below the Southwest Plant has an average D.O. of less than 1 ppm and an average coliform bacteria content of 2,100,000 per 100 ml. which poses a constant threat to the Siler City water supply. The Northeast Plant, at the time of the survey, was an overloaded septic tank which received little maintenance, causing a foul condition in the receiving stream. This has since been replaced by a secondary treatment plant that appears to be doing a good job. The new plant should continue to be operated in a satisfactory manner in order to protect the Siler City water supply. The two other plants, in addition to being very poorly operated, have reached or are about to reach their designed capacity. While the Town of Liberty is to be commended for the progress made in protecting the streams in its area, an engineering study should be made with the view in mind of either replacing the two small plants or making satisfactory additions. In the meantime they should be placed in the best of operating condition and be carefully operated in order to protect the respective water supplies.

The Town of Ramseur discharges domestic sewage with a P.E. of 1,500 to two Imhoff tanks, the effluents therefrom having a P.E. of 975. The smaller plant (West Plant) is located on the west side of the river and does not receive the attention given to the larger plant (East Plant) located on the east side of the river in the flood plain. Both plants either have reached or are approaching their designed capacity and, in addition, it is obvious that the best of primary treatment is insufficient to protect beneficial downstream uses under critical conditions of low flows and summer temperatures. While Deep River at this point is in the zone of recovery from the pollution load received at Franklinville, the impact of the partially treated sewage from Ramseur is such as to retard recovery for many miles downstream from the outfalls. The river at this point is highly regulated and for this reason the analyses of samples collected at flows considerably above the observed minimum of 6 c.f.s. during the period of study do not reflect the most adverse conditions. In recognition of their responsibilities in this matter, the Town Officials have initiated studies in regard to the measures required to protect the beneficial downstream uses. It is urged that the necessary measures be carried out as rapidly as possible.

Enterprise Manufacturing Company at Coleridge discharges untreated domestic sewage from an average of 100 employees on two shifts into the canal just above the hydroelectric power station. This waste creates a local nuisance and could be completely removed by installing a septic tank with nitrification lines.

Lucks, Inc., a cannery at Seagrove, collects its waste in a holding tank which also acts as a grease trap. The waste contains an estimated P.E. of 3,600 before it is discharged to the tank. The solids from this tank are pumped out periodically and either sold to farmers or given to the employees for hog feed. When the tank overflows it drains into a highway ditch which flows to the headwaters of Bear Creek. The dissolved oxygen in the water flowing in the ditch under these conditions is zero, the B.O.D. averages 180 ppm, while coliform bacteria are found in large numbers. The stream bed at this location is filled with garbage and debris. It becomes a local nuisance at times when the tank is overflowing which results in complaints. One mile downstream where the flow has increased the condition has greatly improved. The success of this waste disposal system lies in the collection of all the waste and its removal from the premises. If this cannot be accomplished, appropriate treatment facilities will have to be installed.

The Town of Star has three sewage treatment plants. One of these is in the Yadkin River Basin which has been classified. The other two, both septic tanks, discharge to the headwaters of Cotton Creek. One of these plants is small and serves only the school and approximately 100 people. This discharges to a small tributary of Cotton Creek just below the larger tank. This latter tank serves 428 people and the Russell Hosiery Mill, which has an industrial waste P.E. of 500. The two plants receive a total P.E. of 1,149. The stream approximately one mile below the last plant contained no dissolved oxygen and had 2,300,000 coliform bacteria per 100 ml. The Town has employed an engineer and is discussing plans to improve this condition. It is urged that remedial measures be installed at the earliest date practicable.

The Town of Biscoe has two sewage treatment plants. One discharges to the Yadkin River Basin; the other, an Imhoff tank with sand filters, discharges to Lick Creek. The plant serves a population of 464 and the Coca-Cola Bottling Company, which has an estimated P.E. of 875, making a total P.E. of 1,339 to the treatment plant. The stream approximately one mile below the plant effluent has an objectionable odor, gray color, and heavy sludge banks, contains no dissolved oxygen and has an excessive number of coliform bacteria. These objectionable conditions, largely due to the bypassing of the sand filters, cause the stream to be a nuisance from the local standpoint. The present facility would probably be adequate if it is put into first-class condition and then maintained and operated properly.

The Town of Candor discharges primary treated domestic sewage into the headwaters of Cabin Creek. The treatment facilities consist only of a greatly overloaded Imhoff tank that is in need of maintenance. The plant serves a population of 650 while the effluent has a P.E. of about 480. The creek, even under winter conditions, shows the adverse effects of this loading. The dissolved oxygen is reduced, the B.O.D. is greatly increased, while coliform bacteria are found in the water in large numbers. The stream has a gray color and a strong sewage-like odor. The banks are covered by a heavy growth of dark green algae and sludge deposits. These conditions are aggravated by the fact that sewage formerly diverted to the Yadkin River Basin is now pumped to the Imhoff tank for treatment. This plant should be replaced by units large enough to take care of the Town's present needs and future growth.

The treatment plants for Star, Biscoe, and Candor, while small, are nevertheless very important as they are located on very small streams, which in dry weather would be without flow except for the plant effluents therein. Each is very significant from a local standpoint and also collectively, particularly because they are on the watershed for the Town of Robbins.

Standard Mineral Company, Robbins, mines pyrophyllite on Cabin Creek and processes same at a plant on Bear Creek where 100 men are employed. Sewage is discharged to a septic tank and nitrification field which appeared to be working satisfactorily. There is no waste from the processing plant and only drainage from the mining area where working pits are dewatered from time to time. An occasional complaint has been made as to turbid water at the Robbins intake, alleged to be caused by mine drainage. Should this prove to be a nuisance, the mine drainage should be settled in one of the abandoned excavated areas prior to discharge to Cabin Creek or otherwise treated.

The Town of Robbins during the period of study discharged sewage and industrial waste to a primary treatment plant on Bear Creek with a P.E. of 3,912. The effluent to Bear Creek had an estimated P.E. of 2,934 when the plant was being used; however, the plant was intermittently by-passed during the study, because of infiltration of sand to the settling tank, and no treatment was being given the sewage and waste at such times. The creek below the outfall reflected these conditions. The dissolved oxygen in the stream was reduced to as little as 1.0 ppm, while the B.O.D. was increased to a maximum of 11 ppm and the coliform bacteria to a maximum of 930,000 per 100 ml. The stream along the right bank was gray in color, while the bottom and the vegetation were covered with layers of sludge. During the study the industrial waste was derived from sizing operations at Robbins Mills, Inc., and from poultry processing at The Parker Poultry Company. Since that time the textile mill has become the Robbins Plant of the Amerotron Corporation and two additional poultry processing plants, Colonial Poultry Company and Crawford Hussey Poultry Company, have been added to the sewerage system. The textile plant now has waste from cold water tint dyeing which has a rather high B.O.D. and contains a large amount of salt. Should this waste "slug" the treatment plant, the biological processes may well be adversely affected. The poultry plant operations now interfere seriously with the operation of the treatment plant, due to the clogging of the bar rack and settling tank weir with feathers and coagulated blood. It is obvious that the analytical data collected during the study no longer reflects present stream conditions with the new plant loadings. The Town, recognizing its responsibility in this matter, has employed an engineer who is making a comprehensive study of the present conditions with the view in mind of improving the receiving stream. It is urged that these studies be completed and remedial measures be constructed as rapidly as possible. In this connection, consideration should be given to sewer-use ordinances designed to govern the discharge of industrial wastes to the treatment plant.

Currie Mills, Inc., at Highfalls discharge domestic sewage from 60 to 120 employees at the mill into Deep River via the raceway. The volume of the waste is small but causes an undesirable odor and an unsightly condition on the surface of the water immediately below the outfall. This local nuisance could be completely removed by installing a septic tank with nitrification lines.

The Town of Carthage is served by a sewerage system with three outfalls. There is an Imhoff tank on one of the outfalls which carries the largest flow and serves a population of 500. The effluent discharges into a ditch that has been fouled by sludge deposits and heavy green algae. This plant at one time had a sand filter but it has long ago been abandoned. Approximately $\frac{1}{2}$ mile below this outfall the stream water has a B.O.D. of 11 ppm and a coliform bacteria content of 2,300,000 per 100 ml. The north outfall is the next largest and serves a population of 125. It discharges raw sewage into Little Creek which has been the source of complaints because of its use for cattle watering and because of odors. The west outfall is very small, serving only 100 people. It discharges into an almost dry ditch causing extreme odors in warm weather and complaints from downstream land owners. The stream bed is covered with sludge deposits and green algae. During the study in 1954 the streams were so dry as to prevent sampling as there was simply no water to sample a short distance below the three outfalls. Naturally, foul conditions existed at and immediately below the outfalls. A possible solution to these unhealthy conditions would be to consolidate all the sewage and treat it in one plant located on the stream containing the most dilution water.

General Creosoting Company at Gulf has a waste that is high in color, B.O.D., and phenols. This waste consists of excess creosote, boiler blow-off, and storm drainage from the wood and drying yards. The waste is collected and settled in a lagoon. The overflow from this lagoon is through a small ditch for approximately a mile to an unnamed stream, thence to Deep River. The color has dissipated by the time it reaches Deep River but there was still 50 ppb of phenols present in the river water as compared to 30 ppb in the river water above this waste. When it is considered that the river flow at the time these analyses were made was 270 c.f.s. as compared to an observed minimum flow of but 5.5 c.f.s. in 1954, it is obvious that the phenols present in this waste and from upstream sources pose a threat to downstream water supplies taken from the Cape Fear River during critical times. It is apparent, therefore, that treatment other than simple lagooning is required to protect downstream water uses.

The City of Sanford has two sewage treatment plants. The Jonesboro Plant sewers the southern part of town and discharges into Upper Little River in the lower section of the basin and will be discussed elsewhere in this report. The Spring Lane Plant, which is located on Big Buffalo Creek, is the largest and receives most of the industrial waste. It serves a population of 10,800. The plant has a heavy B.O.D. load and an operating efficiency of only 70%. The dissolved oxygen in the stream below the plant is reduced to zero while the average B.O.D. is increased to 59 ppm and the coliform bacteria content to 970,000 per 100 ml. These conditions have improved very little near the mouth of the stream. Additions and improvements should be made at this plant to bring its operating efficiency up to present requirements and for a reasonable period in the future.

Little Buffalo Creek carries storm drainage from the northeast section of Sanford, part of which is unsewered. The stream at many locations has a floating sludge and an oil slick on its surface. The water contains large numbers of coliform bacteria and has a high B.O.D. which indicate that septic tank drainage is reaching the stream and confirm the presence of untreated industrial waste. In order to protect this stream, arrangements should be made to sewer this section of Town.

The Town of Siler City has a primary sewage and industrial waste treatment plant consisting of a mechanical bar rack, settling basin, and digester. The plant is heavily overloaded and is removing very little B.O.D. from the waste. The effluent is discharged into Loves Creek. The plant serves a population of 2,100 people and industrial waste with a P.E. of 4,276. Immediately below the plant the stream has no dissolved oxygen, an average B.O.D. of 320 ppm, and a coliform bacteria content of 110,000,000 per 100 ml. The water has a strong sewage-like odor, varied colors, and floating solids approximately two miles below the outfall. Plans should be made to enlarge and properly operate and maintain this plant as rapidly as possible.

Summary Discussion of Pollution in Segment III

Deep River, as noted previously, shows good improvement from upstream pollution immediately above the Town of Franklinville and in fact, the condition of the water is generally of such quality for the whole of the main stem of this segment as to support fish life. While fish are found in the river below Franklinville, the untreated sewage and industrial waste from Randolph Mills pollute the water to such an extent as to jeopardize this fishery and on at least one occasion contributed to a fish kill. The partially treated sewage from the Town of Ramseur further burdens the river, although no fish kills have been reported below this Town. Good fishing is reported in Richland Creek near the Town of Coleridge.

The headwaters of Bear Creek, above the water supply of the Town of Robbins, are polluted with sewage and/or industrial waste from the Towns of Biscoe, Candor and Star and by industrial waste from Lucks, Inc., in the Village of Seagrove. Bear Creek below the Town of Robbins is fouled with partially treated, and at times untreated, sewage and industrial waste. While McLendons Creek is but slightly polluted at its mouth, small tributaries in the vicinity of the Town of Carthage are highly polluted with sewage from this Town. Little Governor Creek northeast of the Town of Carthage is reported to be a good fishing stream. Big Buffalo Creek is seriously polluted by the effluent from the Spring Lane sewage and industrial waste treatment plant of the City of Sanford, while Little Buffalo Creek receives pollution from the unsewered area of this City which is drained by it.

The Town of Liberty lies at the headwaters of both Sandy Creek and Rocky River. The partially treated sewage from the West Plant on a tributary of Sandy Creek poses a threat to the safety of the water supply of the Town of Ramseur. While continued good operation of the new Northeast Plant on North Fork of Rocky River should afford satisfactory protection for the water supply of Siler City, the partially treated sewage from the Southwest Plant on a tributary of Rocky River is a threat to the safety of this supply. Rocky River below the lower dam of the Siler City water supply, and its tributary Bear Creek, are good fishing streams. However, the pollution in Loves Creek from the Siler City sewage and industrial waste treatment plant jeopardizes the fish in Rocky River for some distance below this creek.

The Town of Liberty is to be highly commended for constructing the modern sewage and industrial waste treatment plant on North Fork Rocky River but it is important that the two remaining plants should be modernized or replaced at

the earliest possible date. The Towns of Ramseur, Robbins, and Star are to be commended for initiating studies designed to secure the improvement of the streams in their respective areas. However, these corrective measures should be carried out as rapidly as possible and those who have not initiated necessary action should do so immediately.

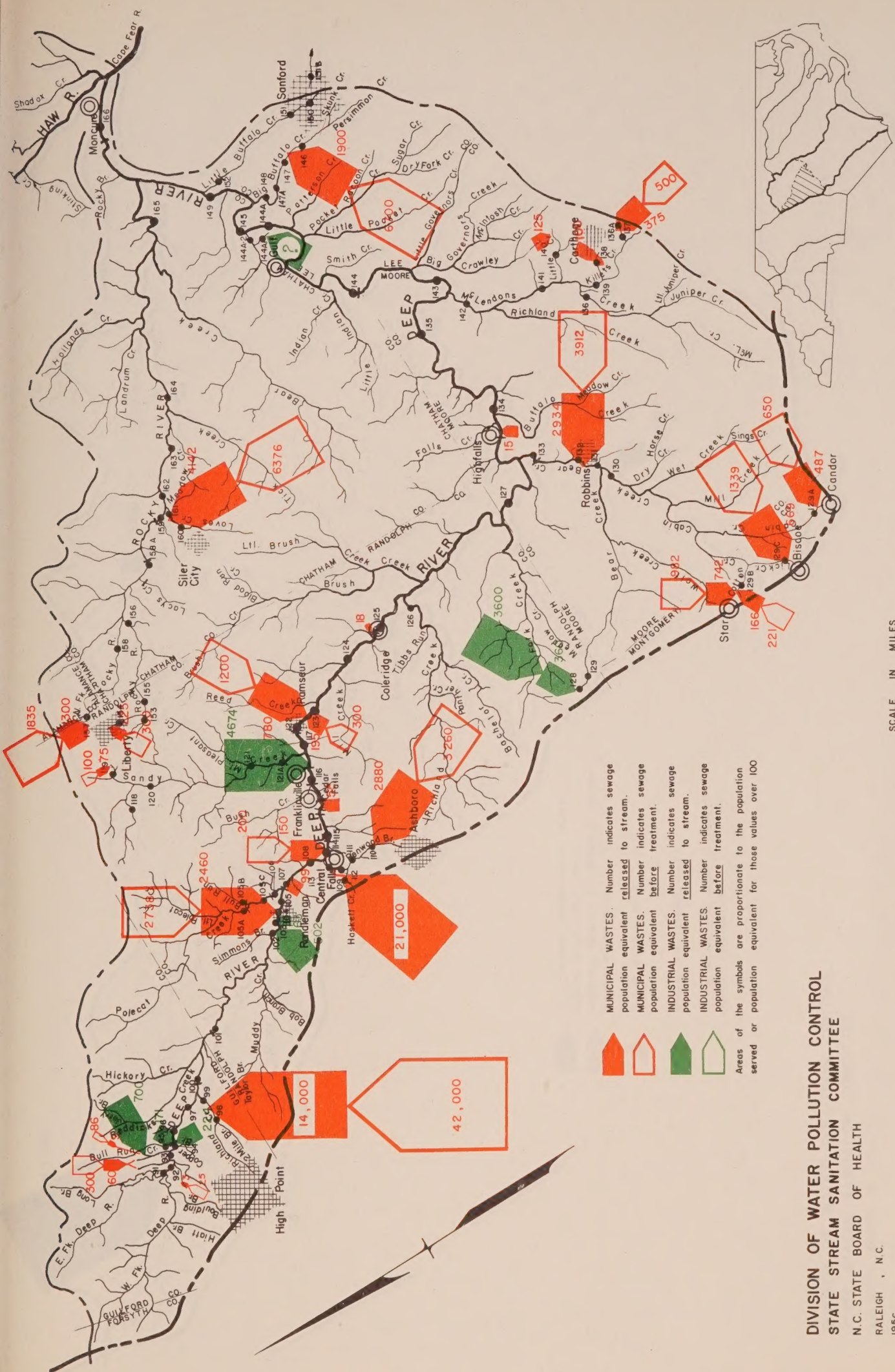
Summary Discussion of Pollution in North Carolina

Deep River, as noted previously, shows good improvement from the pollution immediately above the town of Franklinsville and in fact, the condition of the water is relatively good for the whole of the main stem of this segment as far as the river below Franklinsville. The untreated sewage and industrial waste from Franklinsville pollutes the water to such an extent as to jeopardize this segment and at least one section contributed to a fish kill. The partially treated sewage from the Town of Ramseur further pollutes the river, although no fish kills have been reported below this town. Good fishing is reported in the main stem of the river near the town of Coleridge.

The wastewater of Bear Creek, above the water supply of the town of Robbins, are polluted with sewage and/or industrial waste from the town of Robeson, Graham and other and by industrial waste from Lenoir, Inc. In the village of Bear Creek, a creek below the town of Robbins is found with partially treated, and at times untreated, sewage and industrial waste. While the water of the town of Robbins is but slightly polluted at the mouth, small quantities in the vicinity of the town of Carthage are slightly polluted with sewage from this town. Little downstream Creek northeast of the town of Carthage is reported to be a good fishing stream. The Buffalo Creek is seriously polluted by the effluent from the Star Line sewage and industrial waste treatment plant of the City of Sanford. While Little Buffalo Creek receives pollution from the unsewered area of the city which is drained by it.

The town of Liberty lies in the watershed of both Sandy Creek and Rocky River. The partially treated sewage from the West plant on a tributary of Sandy Creek poses a threat to the safety of the water supply of the town of Ramseur. While the town and operation of the new Ramseur plant on Sandy Creek of Rocky River should afford satisfactory protection for the water supply of Star City, the partially treated sewage from the Ramseur plant on a tributary of Rocky River is a threat to the safety of this supply. Rocky River below the lower dam of the Silver City water supply, and the tributary Bear Creek, are good fishing streams. However, the pollution in lower Bear Creek from the Silver City sewage and industrial waste treatment plant jeopardizes the fish in Rocky River for some distance below this extent.

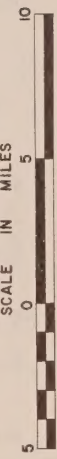
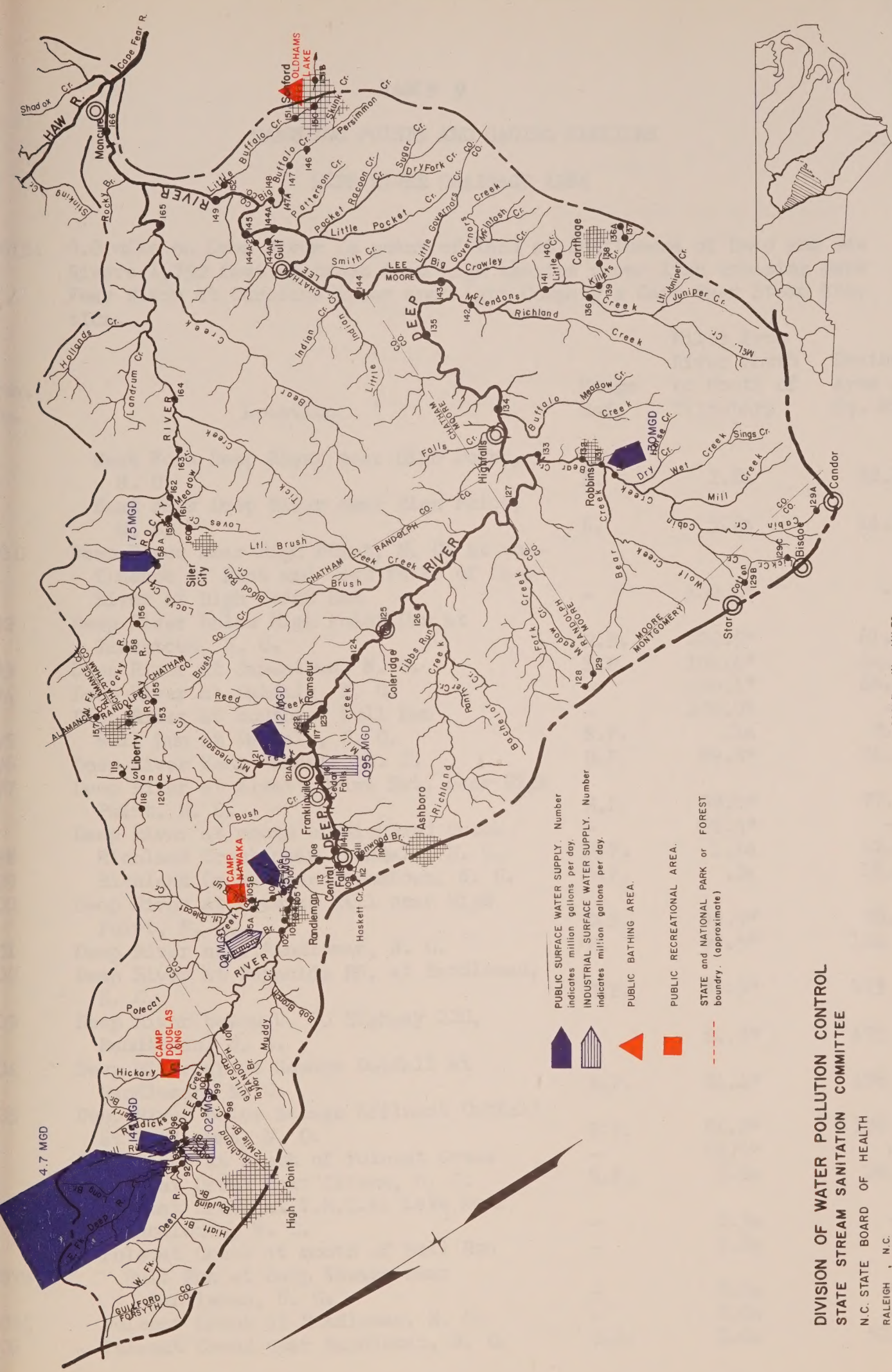
The town of Liberty is to be highly commended for constructing the modern sewage and industrial waste treatment plant on West Fork Rocky River and in its important that the two remaining plants should be modernized or replaced at an early date.



CAPE FEAR RIVER BASIN DEEP RIVER DRAINAGE AREA POINTS OF SIGNIFICANT SOURCES OF POLLUTION

- ▲ MUNICIPAL WASTES. population equivalent released to stream. Number indicates sewage before treatment.
- ▲ INDUSTRIAL WASTES. population equivalent released to stream. Number indicates sewage before treatment.
- ◀ Areas of the symbols are proportionate to the population served or population equivalent for those values over 100

DIVISION OF WATER POLLUTION CONTROL
STATE STREAM SANITATION COMMITTEE
N.C. STATE BOARD OF HEALTH
RALEIGH, N.C.
1956



CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA
PUBLIC AND INDUSTRIAL WATER SUPPLIES
RECREATION AREAS

DIVISION OF WATER POLLUTION CONTROL
STATE STREAM SANITATION COMMITTEE
N.C. STATE BOARD OF HEALTH
RALEIGH, N.C.
1956

TABLE 9
SAMPLING POINTS AND GAGING STATIONS
DEEP RIVER DRAINAGE AREA

NOTE: 0.0 mile on Deep River is point of land at confluence of Deep and Haw Rivers 1,750 feet upstream from high tension power line crossing Cape Fear River at Carolina Power and Light Company's Cape Fear Steam Station.

Sta. No.	Location	Stage Ref.	Miles from River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
	West Fork Deep River near High Point, N. C.	R.	2.8a	32.1
	East Fork Deep River near High Point, N. C.	R.	3.2a	14.2
91C	Deep River near High Point, N. C. at con- fluence of East and West Forks of Deep River at High Point Dam	-	102.8*	-
92	Deep River below High Point Dam at Jamestown, N. C.	R.P.	102.5*	61.4
93	Deep River at Jamestown, N. C.	R.P.	101.4*	64.4
94	Deep River at Oakdale, N. C.	-	100.1*	66.3
	Deep River at mouth of Bull Run	-	100.0*	-
95	Bull Run at Oakdale, N. C.	R.P.	.1a	7.75
96	Deep River near Oakdale, N. C.	R.P.	99.8*	74.2
97	Deep River at Kivett Drive Ext. near High Point, N. C.	R.P.	98.0*	77.4
	Deep River at mouth of Richland Creek	-	96.4*	-
98	Richland Creek near Archdale, N. C.	R.P.	1.1a	12.7
99	Richland Creek near Groomtown, N. C.	R.P.	.2a	16.3
100	Deep River at Freeman Mill near High Point, N. C.	O.S.	95.9*	96.3
101	Deep River near Randleman, N. C.	R.	92.5*	124
102	Deep River at Reynolds Rd. at Randleman, N. C.	R.P.	85.3*	173
103	Deep River below U. S. Highway 220, Randleman, N. C.	-	84.8*	175
104	Deep River above Sewage Outfall at Randleman, N. C.	R.P.	84.4*	176
105	Deep River below Sewage Effluent Outfall at Randleman, N. C.	R.P.	84.2*	176
	Deep River at mouth of Polecat Creek	-	82.9*	-
	Polecat Creek near Climax, N. C.	R.P.	5.6a	28.2
105A	Polecat Creek at Y.M.C.A. Lake near Randleman, N. C.	-	2.3a	-
	Polecat Creek at mouth of Bull Run	-	2.2a	-
105B	Bull Run at Camp Nawaka near Randleman, N. C.	-	0.1a	-
	Polecat Creek at Randleman, N. C.	-	2.0a	-
105C	Polecat Creek at Randleman, N. C.	O.S.	1.0a	52.0
106	Polecat Creek near Randleman, N. C.			

Sta. No.	Location	Stage Ref.	Miles from River Mouth or Mouth of Tributary	Drainage Area in Sq. Mile
107	Deep River at Worthville, N. C.	R.P.	82.8*	231
108	Deep River above Haskett Creek near Central Falls, N. C.	-	80.3*	239
	Deep River at mouth of Haskett Creek	-	80.1*	-
109	Haskett Creek above Penwood Branch near Asheboro, N. C.	R.P.	1.5a	5.62
	Haskett Creek at mouth of Penwood Branch	-	1.4a	-
110	Penwood Branch at Asheboro, N. C.	R.P.	2.9a	1.53
	Penwood Branch at N. C. Hwy. 49A near Asheboro, N. C.	R.P.	.5a	3.9
111	Penwood Branch above Haskett Creek near Asheboro, N. C.	R.P.	.1a	4.26
112	Haskett Creek below Penwood Branch near Asheboro, N. C.	R.P.	1.1a	9.9
113	Haskett Creek at Central Falls, N. C.	R.P.	.3a	10.6
114	Deep River at Central Falls, N. C.	-	79.7*	251
115	Deep River at Cox Dam near Cedar Falls, N. C.	R.P.	78.6*	253
116	Deep River at Franklinville, N. C.	-	75.7*	282
117	Deep River near Ramseur, N. C.	-	73.9*	286
	Deep River at mouth of Sandy Creek	-	73.7*	-
118	Sandy Creek near Melancton, N. C.	R.P.	12.7a	8.74
	Sandy Creek at mouth of unnamed tri- butary to Sandy Creek	-	11.0a	-
119	Unnamed tributary to Sandy Creek at Liberty, N. C.	R.P.	1.7a	.9
120	Sandy Creek near Liberty, N. C.	R.P.	9.5a	23.4
121	Sandy Creek near Ramseur, N. C.	R.P.	3.2a	53.1
121A	Sandy Creek near Franklinville, N. C.	-	1.7a	-
122	Deep River at dam at Ramseur, N. C.	-	72.7*	345
	Deep River at Ramseur, N. C.	R.	72.3*	346
123	Deep River at Craven Farm below Ramseur, N. C.	-	71.1*	347
124	Deep River near Parks Cross Roads, N. C.	R.P.	68.2*	390
125	Deep River at Coleridge, N. C.	R.P.	65.7*	398
	Deep River at mouth of Richland Creek	-	63.4*	-
126	Richland Creek near Coleridge, N. C.	R.P.	.8a	59.6
	Deep River at mouth of Brush Creek	-	62.2*	-
	Brush Creek near Coleridge, N. C.	R.P.	1.4a	66.9
	Deep River at mouth of Fork Creek near Coleridge, N. C.	-	55.7*	-
	Fork Creek near Coleridge, N. C.	R.P.	3.0a	36.5
127	Deep River at Howard's Mill near Robbins, N. C.	R.P.	54.3	608
	Deep River at mouth of Bear Creek	-	51.2*	-
128	Bear Creek at Seagrove, N. C.	-	17.1a	Indet.
129	Bear Creek at Whynot, N. C.	R.P.	16.0a	1.35
	Bear Creek near Spies, N. C.	O.S.	8.0a	44.0
	Bear Creek at mouth of Cabin Creek	-	5.0a	-

Sta. No.	Location	Stage Ref.	Miles from River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
129A	Cabin Creek at Candor, N. C.	-	15.8a	-
	Cabin Creek at mouth of effluent ditch	-	15.8a	-
129A1	Effluent ditch to Cabin Creek near Candor, N. C.	-	-	-
129A2	Cabin Creek near Candor, N. C.	-	15.8a	1.5
	Cabin Creek at mouth of Cotton Creek	-	9.5a	-
129B	Cotton Creek near Star, N. C.	-	4.8a	Indet.
	Cotton Creek at mouth of Lick Creek	-	2.7a	-
129C	Lick Creek near Biscoe, N. C.	-	.4a	1.4
130	Cabin Creek near Robbins, N. C.	R.P.	.4a	78.3
131	Bear Creek at Robbins, N. C.	R.	4.8a	134
	Bear Creek below Sewage Effluent Out- fall at Robbins, N. C.	R.P.	3.9a	135
132	Bear Creek near Robbins, N. C.	-	3.8a	136
133	Bear Creek near Leaman, N. C.	O.S.	.9a	142
134	Deep River near High Falls, N. C.	R.P.	46.9*	814
135	Deep River at Glendon, N. C.	R.P.	39.2*	844
	Deep River at mouth of McLendons Creek	-	34.7*	-
136	McLendons Creek near Carthage, N. C.	R.P.	10.2a	41.9
	McLendons Creek at mouth of Killelts Creek	-	9.4a	-
136A	Killelts Creek at small lake West of filter plant near Carthage, N. C.	-	4.9a	-
	Killelts Creek at mouth of unnamed tri- butary	-	3.3a	-
137	Unnamed tributary to Killelts Creek near Carthage, N. C.	-	1.1a	.16
	Killelts Creek at mouth of unnamed tri- butary at Brooklyn Street Extension at Carthage, N. C.	-	2.5a	-
138	Unnamed tributary to Killelts Creek at Brooklyn Street Extension Carthage, N. C.	-	1.2a	.20
139	Killelts Creek near Carthage, N. C.	R.P.	1.4a	8.74
	McLendons Creek at mouth of Little Creek	-	7.7a	-
140	Little Creek near Carthage, N. C.	-	3.0a	.76
141	McLendons Creek near Hallison, N. C.	R.P.	6.6a	61.5
142	McLendons Creek near Glendon, N. C.	R.P.	1.4a	99.0
143	Deep River near Glendon, N. C.	R.P.	33.5*	957
144	Deep River at Carbonton, N. C.	R.P.	26.6*	1011
144A	Deep River at Gulf, N. C.	-	18.2*	-
	Deep River at mouth of unnamed tributary	-	16.4*	-
	Unnamed tributary at mouth of effluent ditch at General Creosoting Company	-	1.3a	-
144A1	Effluent ditch at General Creosoting Company at Gulf, N. C.	-	0.3a	-
144A2	Unnamed tributary to Deep Run near Coalglen, N. C.	-	0.1a	-
145	Deep River near Gulf, N. C.	R.P.	16.1*	1112

Sta. No.	Location	Stage Ref.	Miles from River Mouth or Mouth of Tributary	Drain Area Sq. M.
	Deep River at mouth of Big Buffalo Creek	-	13.9*	
146	Big Buffalo Creek near Sanford, N. C.	R.P.	6.3a	9
147	Big Buffalo Creek at U. S. Hwy. 421 near Sanford, N. C.	R.P.	5.5a	10.
147A	Big Buffalo Creek below U. S. Hwy. 421 near Sanford, N. C.	R.P.	4.7a	12.
148	Big Buffalo Creek near Connock, N. C.	R.P.	0.7a	19.
149	Deep River at Coalglen, N. C.	R.P.	10.7*	1150
	Deep River at mouth of Little Buffalo Creek	-	10.3*	-
150	Little Buffalo Creek at McIntosh Street at Sanford, N. C.	-	8.3a	0.
151	Little Buffalo Creek at S. A. L. Railway at Sanford, N. C.	R.P.	6.7a	2.
152	Little Buffalo Creek near Coalglen, N.C.	R.P.	1.2a	6.
	Deep River at mouth of Rocky River	-	6.9*	-
153	Rocky River at Liberty, N. C.	R.P.	35.1a	1.
	Rocky River at mouth of unnamed tri- butary	-	34.5a	-
154	Unnamed tributary to Rocky River at Liberty, N. C.	R.P.	1.2a	0.
155	Rocky River near Liberty, N. C.	R.P.	33.8a	4.
156	Rocky River near Staley, N. C.	R.P.	29.5a	14.
	Rocky River at mouth of North Branch Rocky River	-	29.1a	-
157	North Branch Rocky River near Liberty, N. C.	O.S.	6.6a	2.
	North Branch Rocky River near Staley, N. C.	R.P.	2.1a	9.
158	North Branch Rocky River near Siler City, N. C.	R.P.	1.3a	12.
158A	Rocky River at Siler City Water Supply	-	25.7a	-
159	Rocky River at U. S. Hwy. 64 near Siler City, N. C.	R.P.	22.0a	68.7
	Rocky River at mouth of Loves Creek	-	21.5a	-
160	Loves Creek above sewage effluent out- fall near Siler City, N. C.	R.P.	1.0a	7.7
161	Loves Creek below sewage effluent out- fall at Siler City, N. C.	R.P.	0.7a	8.1
162	Rocky River near Siler City, N. C.	R.P.	20.7a	78.7
163	Rocky River near Mt. Vernon Springs, N. C.	R.P.	18.1a	93.2
	Rocky River at mouth of Tick Creek	-	15.5a	-
	Tick Creek near Bonlee, N. C.	R.P.	1.8a	19.3
164	Rocky River near Bonlee, N. C.	R.P.	14.8a	124
	Rocky River at mouth of Bear Creek	-	5.2a	-
	Bear Creek near Goldston, N. C.	R.P.	6.5a	43.2
165	Rocky River near Coalglen, N. C.	R.P.	3.4a	23.7

Sta. No.	Location	Stage Ref.	Miles from River Mouth or Mouth of Tributary	Drainage Area in Sq. Miles
	Deep River at Moncure, N. C.	R.	4.6*	1410
166	Deep River at dam at Moncure, N. C.	R.P.	3.2*	1412

* Miles from mouth of Main River.

a Miles from mouth of tributary.

Stage Reference

- R. - Recording Gage
- R.P. - Reference Point
- O.S. - Outside Staff (Staff Gage)

TABLE 10
PUBLIC SURFACE WATER SUPPLIES
CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Avg. Used M.G.D.	Owner- ship	Source of Supply	Im- pounded	Date In- stalled	Design Capacity M.G.D.	Treatment
High Point	39,973	43,000	4.700	M	Deep River	Yes	1925	7.500	Alum, Sed., Filt., Post Cl ₂ , Lime, pH adj.
Jamestown (Oakdale Cotton Mills, Inc.) North Asheboro and Central Falls Sanitary District Ramseur	-	748	0.144	P	Deep River	Yes	1947	0.150	Alum, Pre Cl ₂ , Sed., Filt., Lime
Water purchased from Asheboro and resold.									
Randleman	1,134	2,000	0.120	M	Sandy Creek	Yes	1935	0.200	Alum, Sed., Filt., Lime, Post Cl ₂
Robbins	2,066	2,100	0.250	M	Pollocat Creek	Yes	1935	0.250	Alum, Pre Cl ₂ , Sed., Filt.
Siler City	1,158	2,500	0.300	M	Bear Creek	No	1937	1.000	Alum, Pre Cl ₂ , Sed., Filt., Lime
	2,501	3,500	0.750	M	Rocky River	Yes	1925	1.000	Alum, Sed., Filt., Post Cl ₂

TABLE 11
INDUSTRIAL SURFACE WATER SUPPLIES
CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA

Franklinville	-	-	0.095	P	Deep River	Yes	-	-	Filtered, Chlori- nated, pH adj.
Randolph Mills	-	-	-	-	-	-	-	-	-
Jamestown	-	-	-	-	-	-	-	-	-
Oakdale Cotton Mills, Inc.	-	-	0.020	P	Deep River	Yes	-	-	Zeolite Soften.
Randleman	-	-	-	-	-	-	-	-	-
Commonwealth Hosiery Co.	-	-	0.020	P	Simmons Br.	Yes	-	-	Soda Ash, Alum

CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Est. Consump- tion		No. cf Wells	Est. Total Yield		Date Installed	Type of Treatment	
				M.G.D.	M.G.D.		M.G.D.	M.G.D.		#1 Lime for pH adj., Cl ₂	#2 Alum, Pre Cl ₂ , Filtration
Carthage	1,194	1,500	M	0.150	0.150	#1 Springs #2 Reservoir	-	-	1925 - 1951	-	-
Liberty	1,342	1,342	M	0.125	0.125	4	0.250	0.250	1926	-	-
Star	677	677	M	0.143	0.143	2	0.201	0.201	-	-	-

TABLE 13
INDUSTRIAL GROUND WATER SUPPLIES
CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA

Cedar Falls	-	-	P	0.002	?	-	-	-	-	None	-
Sapona Mfg. Co.	-	-	P	0.014	?	-	-	-	-	Cl ₂	-
Franklinville	-	-	P	?	2	-	0.260	-	-	None	-
Randolph Mills	-	-	P	0.002	?	-	-	-	-	None	-
Gulf	-	-	P	0.002	1	-	-	-	-	None	-
General Creosoting Co.	-	-	P	0.006	2	-	-	-	-	None	-
High Falls	-	-	P	0.004	1	-	-	-	-	None	-
Currie Mills	-	-	P	0.125	1	-	-	-	-	De-ionized	-
Randleman	-	-	P	0.011	1	-	-	-	-	None	-
Commonwealth Hosiery Co.	-	-	P	0.010	1	-	-	-	-	None	-
Cone Mills Corporation	-	-	P	0.001	?	-	-	-	-	None	-
Sanford	-	-	P	-	-	-	-	-	-	-	-
Cook Poultry Co.	-	-	P	-	-	-	-	-	-	-	-
Cornell Dubilier	-	-	P	-	-	-	-	-	-	-	-
Patterson Packing Co.	-	-	P	-	-	-	-	-	-	-	-
Seagrove	-	-	P	-	-	-	-	-	-	-	-
Lucks, Inc.	-	-	P	-	-	-	-	-	-	-	-
Worthville	-	-	P	-	-	-	-	-	-	-	-
Leward Cotton Mills	-	-	P	-	-	-	-	-	-	-	-

TABLE 14
POINTS OF SIGNIFICANT SOURCES OF POLLUTION
CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treat- ment	Design Capa- city M.G.D.	Est. P.E. Before Treat- ment	Est. P.E. After Treat- ment	Receiving Stream and Interconnecting Streams to Main River
Asheboro										
Haskett Creek Outfall	7,701	4,800	M	D.S.& I.W.	0.768	None	-	21,000	21,000	Hasket Cr. to Deep River
Penwood Branch Plant	-	3,200	M	D.S.	0.369	Pri.	0.030	3,260	2,880	Penwood Br. to Hasket Cr. to Deep River
Biscoe										
Eastside Plant (1)	1,034	464	M	D.S.& I.W.	0.025	Sec. (2)	-	1,339	669	Lick Cr. to Cotton Cr. to Cabin Cr. to Bear Cr. to Deep River
Cardor	617	650	M	D.S.	0.042	Pri.	-	650	487	Cabin Cr. to Bear Cr. to Deep River
Carthage										
Imhoff Tank	1,194	500	M	D.S.	0.050	Pri.	0.023	500	375	Unnamed tributary to Killlets Cr. to McLennons Cr. to Deep River
Little Creek Outfall	-	125	M	D.S.	0.013	None	-	125	125	Little Cr. to McLennons Cr. to Deep River
Brooklyn Street Outfall	-	100	M	D.S.	0.010	None	-	100	100	Unnamed tributary to Killlets Cr. to McLennons Cr. to Deep River
Cedar Falls										
Jordan Spinning Company	-	225	P	D.S.	0.006	None	-	55	55	Deep River
Coleridge	-	120	P	D.S.	0.002	None	-	18	18	Deep River
Enterprise Mfg. Co.	-	550	P	D.S.& I.W.	0.109	None	-	4,674	4,674	Deep River
Franklinville	-	550	P	D.S.	?	Sec.	-	?	?	Deep River
Randolph Mills, Inc.	-	550	P	D.S.& I.W.	0.109	None	-	4,674	4,674	Deep River
Septic Tank & Sand Filter	-	550	P	D.S.	?	Sec.	-	?	?	Deep River

TABLe 14

POINTS OF SIGNIFICANT SOURCES OF POLLUTION
CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treatment	Design Capacity M.G.D.	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream and Interconnecting Streams to Main River
Gulf	-	-	P	I.W.	?	Lagoon	-	?	?	Unnamed Tributary to Deep River
General Creosoting Co.	-	-	P	D.S.	0.002	None	-	15	15	Deep River
High Falls	-	60	P	D.S.	0.002	None	-	15	15	Deep River
Currie Mills	-	60	P	D.S.	0.002	None	-	15	15	Deep River
High Point	-	60	P	D.S.	0.002	None	-	15	15	Deep River
Eastside Plant (3)	39,973	27,000	M	D.S. & I.W.	4.060	Sec.	4,000	42,000	14,000	Richland Cr. to Deep River
Jamestown	-	-	P	I.W.	0.020	None	-	224	224	Deep River
Jamestown Mills, Inc.	-	245	P	D.S. & I.W.	0.025	None	-	171	171	Deep River
Oakdale Cotton Mills, Inc.	-	100	P	D.S.	0.003	Sec.	-	25	3	Deep River
Ward Baking Co.	-	130	P	D.S.	0.004	Sec.	-	86	9	Deep River
Highland Container Co.	-	1,200	County	I.W.	0.0084	Enzymes	-	700	700	Deep River
Jamestown School Liberty	-	1,200	County	D.S.	0.030	Pri.	-	300	60	Deep River
Northeast Plant (5)	1,342	800	M	D.S. & I.W.	0.135	Pri.	0.027	1,835	1,300	North Branch Rocky R. to Rocky River
Southwest Plant	-	300	M	D.S.	0.030	Sec.	0.010	300	225	to Deep River
West Plant	-	100	M	D.S.	0.010	Sec.	-	100	75	Unnamed tributary to Rocky R. to Deep River
North Asheboro-Central Falls Sanitary Dist.	-	450	S.D.	D.S.	0.020	Pri.	-	200	150	Unnamed tributary to Sandy Creek to Deep River

TABLE 14
POINTS OF SIGNIFICANT SOURCES OF POLLUTION
CAPE FEAR RIVER BASIN
DEEP RIVER DRAINAGE AREA

[illegible]

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 91C (Old WL3) - Located on Deep River (Municipal Lake) at High Point's intake. Drainage Area (sq. mi.)

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
8-4	W	1515	*	28	340	180	6.8	0	34	34	2	1.9	24	0.7	430
8-16	M	0900	*	26	320	80	6.9	0	34	46	3	2.4	29	0.8	39
8-30	M	1800	**	28	42	20	6.8	0	28	31	3	8.3	105	2.5	430
Average				27	230	95	6.8 to 6.9	0	32	37	3	4.2	53	1.3	300

* Sampled at raw water tap at filter plant.

** Sampled at intake.

Station 92 - Located on Deep River below High Point Municipal Lake dam and above point of effluent discharge from Ward Baking Co., Highland Container Co., and Jamestown School sewage treatment plants or systems, also above starch waste discharge from Highland Container Co.

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
6-8	T	0830	6.4	15	540	160	7.2	0	53	38	1	8.5	83	1.8	430
6-14	M	1305	6.1	15	440	70	7.0	0	36	44	4	8.2	80	1.2	91
6-25	F	0600	6.0	15	540	200	7.3	0	48	37	2	7.8	76	2.0	930
7-1	Th	1025	6.0	16	560	140	7.0	0	43	40	2	7.9	79	2.2	730
7-7	W	1400	6.4	18	520	160	7.1	0	43	43	2	7.6	79	2.9	430
7-15	Th	1906	6.1	17	560	180	7.1	0	40	46	1	7.4	76	1.5	430
7-26	M	1555	6.4	16	620	230	7.1	0	46	73	4	8.1	81	2.3	430
7-27	T	1135	6.0	18	580	320	7.1	0	46	49	4	7.1	74	2.6	240
8-4	W	1740	29*	18*	640*	400*	7.2*	0*	50*	43*	2*	7.1*	74*	2.3*	4,300*
8-16	M	1235	6.7	19	680	160	7.0	0	44	30	2	7.0	74	1.8	430
Average			6.2	17	560	180	7.0 to 7.3	0	44	44	2	7.7	78	2.0	460

*Excluded from average, regulated flow.

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 93 - Located on Deep River below points of effluent discharge from Ward Baking Co. Drainage Area (sq. mi.) 64.4
 sewage treatment plant and part of Jamestown School sewage treatment system
 and above part of the effluent from the school system and above Highland
 Container Co. sewage treatment plant effluent and starch waste discharge.

Date Collected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B. O. D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
6-8	T	0900	6.7	21	340	160	7.3	0	42	40	3	6.4	71	1.9	86	930
6-14	M	1330	6.6	22	340	60	7.0	0	38	54	4	5.9	67	1.1	49	4,300
6-25	F	0640	6.3	22	170	50	7.5	0	39	36	3	7.7	88	1.5	64	930
7-1	Th	1050	6.0	25	130	35	7.3	0	38	39	4	8.1	96	5.6	230	43
7-7	W	1410	6.4	29	240	70	7.1	0	40	40	1	7.1	91	2.4	100	4,300
7-15	Th	1850	6.2	28	80	20	7.8	0	40	50	3	5.7	72	2.4	100	430
7-26	M	1710	6.4	28	85	60	7.5	0	39	77	7	6.8	86	2.3	99	430
7-27	T	1430	6.1	27	110	140	7.3	0	38	70	5	7.2	89	1.5	62	730
8-4	W	1135	30*	26*	100*	80*	7.2*	0*	42*	86*	1*	6.8*	83*	1.5*	300*	930*
8-16	M	1255	6.7	25	340	50	7.0	0	41	15	3	3.9	46	1.9	86	930
Average			6.4	25	200	70	7.0 to 7.8	0	39	47	4	6.5	78	2.3	97	1,400

* Excluded from average, regulated flow.

DEEP RIVER DRAINAGE AREA

Station 94 - Located on Deep River below points of effluent discharge from Highland Container company sewage treatment plant and starch waste at intake to water supply of Jamestown and Oakdale Cotton Mills, Inc.

Drainage Area (sq. mi.) 66.3

Date	Col.	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol _o Total ppm ppm	Hardness as CaCO ₃ ppm	Chloride ppm	Hex. ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C 25°C	lbs/day 25°C
1954	6-8	T	0930	6.9	24	160	80	7.5	0	42	4	-	8.2	96	2.4	110
	6-14	M	1400	7.0	25	240	50	7.0	0	42	4	-	8.0	95	2.1	99
	6-25	F	0715	6.4	23	170	50	7.3	0	35	3	0	6.9	79	2.2	95
	7-1	Th	1112	6.0	28	140	25	7.4	0	39	2	-	8.5	108	3.9	160
	7-7	W	1425	6.4	31	120	70	7.4	0	40	2	-	4.4	59	2.3	99
	7-15	Th	1828	6.2	26	100	40	7.7	0	65	2	-	6.1	74	2.2	92
	7-26	M	1645	6.4	28	160	300	7.2	0	79	11	-	6.6	84	3.9	170
	7-27	T	1240	6.2	27	140	120	6.9	0	51	10	-	6.5	80	2.6	110
	8-4	W	1435	30*	29*	180*	80*	6.9*	0*	69*	2*	-	7.5*	96*	2.7*	550*
	8-16	M	1850	6.8	29	180	35	7.3	0	61	4	-	7.9	101	3.4	160
Average				6.5	27	160	90	6.9 to 7.7	0	50	5	-	7.0	86	2.8	120

Date	Col.	Day	Time	Coliform M.C.P.N. per 100 ML	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
1954	6-8	T	0930	2,400	-	-	-
	6-14	M	1400	4,300	-	-	-
	6-25	F	0715	7,500	-	0	0
	7-1	Th	1112	4,300	-	0	0
	7-7	W	1425	930	-	-	-
	7-15	Th	1828	9,300	-	-	-
	7-26	M	1645	9,300	-	-	-
	7-27	T	1240	930	-	-	-
	8-4	W	1435	9,300*	-	-	-
	8-16	M	1850	4,300	-	-	-
Average				4,800			

* Excluded from average, regulated flow.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 95 - Located on Bull Run just above Deep River to show character of inflow. Drainage Area (sq. mi.) 7.75

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 mL.
								Phenol. ppm	Total ppm			ppm	% Sat.			
6-8	T	0955	.82	19	120	25	7.6	0	57	62	5	8.7	93	1.6	9	240
6-14	M	1415	1.4	20	120	35	7.4	0	50	52	4	8.5	92	1.0	9	1,500
6-25	F	0740	.67	19	55	20	7.4	0	58	47	4	7.3	78	0.7	3	9,300
7-1	Th	1130	0*	22*	80*	40*	7.3*	0*	60*	54*	4*	6.6*	75*	1.2*	*	24,000*
7-7	W	1435	.01	28	130	80	7.4	0	60	48	3	6.6	84	1.7	1	9,300
7-15	Th	1750	.12	-	160	50	7.6	0	57	55	5	3.6	-	2.9	2	24,000
7-26	M	1615	0*	25*	320*	270*	7.2*	0*	54*	60*	9*	6.9*	82*	1.4*	*	930*
7-27	T	0535	.33	21	100	55	7.2	0	55	88	7	6.1	68	1.1	2	1,500
8-4	W	1150	.97	23	200	80	7.2	0	40	57	1	8.5	98	3.1	20	43,000
8-16	M	1335	.10	27	680	15	8.1	0	51	70	5	10.0	123	2.4	2	430
Average			.55	22	200	45	7.2 to 8.1	0	54	60	4	7.4	91	1.8	6	11,000

* Excluded from average as sample was collected to represent water in pool with no overflow.

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 96 - Located on Deep River below untreated sewage and industrial waste from Cakdale Drainage Area (sq.mi.) 74.2 Cotton Mills, Inc., and untreated industrial waste from Jamestown Mill, Inc.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1954															
6-8	T	1030	4.6	21	400	40	7.4	0	41	48	-	51	87	5.1	160
6-14	M	1430	5.1	22	260	35	7.3	0	37	42	-	27	93	4.8	170
6-25	F	0800	5.3	20	200	50	7.6	0	41	40	0	3	86	1.4	50
6-30	W	0905	4.9	20	260	50	7.2	0	49	44	-	5	91	3.8	130
7-1	Th	1205	4.9	25	280	40	7.3	0	43	46	-	101	90	8.6	280
7-15	Th	1735	4.6	24	260	40	7.4	0	45	41	-	41	66	9.8	300
7-26	M	1655	4.9	24	540	350	7.3	0	45	73	-	60	64	7.3	240
7-27	T	0630	5.3	20	480	350	7.2	0	42	53	-	10	84	1.7	61
8-4	W	1245	5.6	24	200	90	7.1	0	42	68	-	53	95	2.3	87
8-16	M	1915	4.1	26	360	20	7.4	0	46	52	-	18	83	8.7	240
8-27	F	0950	4.6	23	240	40	7.2	0	56	45	0	44	83	4.5	140
Average			4.9	23	320	100	7.1 to 7.6	0	44	50	-	38	84	5.3	170

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
1954						
6-8	T	1030	9,300	-	-	-
6-14	M	1430	2,400	-	-	-
6-25	F	0800	43,000	0	0	0
6-30	W	0905	43,000	0	0	0
7-1	Th	1205	4,300	-	-	-
7-15	Th	1735	43,000	0	0	0
7-26	M	1655	43,000	0	0	0
7-27	T	0630	9,300	0	0	0
8-4	W	1245	15,000	0	0	0
8-16	M	1915	2,400	0	0	0
8-27	F	0950	930	0	0	0
Average			20,000	0	0	0

TABIE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA
Station 97 - Located on Deep River 1.8 miles below Station 96 also on this river and 1.6 miles above Richland Creek receiving effluent from High Point's Eastside sewage and industrial waste treatment plant. Drainage Area (sq.mi.) 77.4

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1954	6-9	W	1050	4.4	21	280	75	7.0	0	40	58	36	7.5	83	1.8	53
	6-15	T	0910	4.5	22	240	30	7.0	0	43	54	25	7.2	82	1.9	58
	6-17	Th	0840	10*	21*	580*	150*	7.3*	0*	39*	38*	7*	7.4*	82*	2.3*	160*
	6-21	M	1400	19*	24*	210*	90*	7.2*	0*	32*	32*	5*	7.6*	89*	2.4*	310*
	6-30	W	0715	4.4	19	320	50	7.1	0	40	49	47	6.6	70	1.4	42
	7-1	Th	1355	4.2	25	200	50	7.6	0	46	43	8	9.9	118	2.9	82
	7-12	M	1120	4.8	21	210	55	7.4	0	43	42	3	8.7	97	1.7	55
	7-15	Th	1705	5.2	26	180	50	8.1	0	45	52	7	9.3	113	1.5	53
	7-26	M	1230	5.1	24	500	320	7.4	0	42	79	9	7.3	86	2.2	76
	7-27	T	1500	5.1	25	340	320	7.6	0	41	60	9	9.7	115	1.8	62
	8-4	W	1845	4.4	25	420	230	7.3	0	46	79	34	7.5	89	3.7	110
	8-16	M	1415	4.4	26	280	60	7.4	0	43	53	5	7.8	95	2.2	65
	8-27	F	1030	4.2	24	240	50	7.2	0	46	44	20	7.6	89	1.4	40
Average				4.6	23	300	120	7.0 to 8.1	0	43	56	18	8.1	94	2.0	63

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formalde- hyde ppm
1954	6-9	W	1050	4,300	-	-	-
	6-15	T	0910	2,300	-	-	-
	6-17	Th	0840	9,300*	-	-	-
	6-21	M	1400	9,300*	-	-	-
	6-30	W	0715	4,300	0	0	0
	7-1	Th	1355	2,400	0	0	0
	7-12	M	1120	230	-	-	-
	7-15	Th	1705	4,300	-	-	-
	7-26	M	1230	7,300	0	0	0
	7-27	T	1500	15,000	0	0	0
	8-4	W	1845	9,300	-	-	-
	8-16	M	1415	930	-	-	-
Average		F	1030	1,500	-	-	-

*Excluded from average, unseasonable flow.

DEEP RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 12.7

Station 98 -- Located on Richland Creek above point of effluent discharge from
High Point's Eastside sewage and industrial waste treatment plant.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1954																
6-9	W	1130	1.7	24	46	20	7.0	0	74	70	-	28	7.3	86	1.6	18
6-15	T	0930	1.7	23	90	20	7.5	0	78	90	-	24	7.3	84	1.8	21
6-17	Th	0900	2.0	22	400	90	7.3	0	60	65	-	21	7.1	81	2.5	34
6-21	M	1415	2.2	26	60	20	7.4	0	69	71	-	23	7.0	85	1.0	15
6-30	W	0744	1.7	18	34	20	7.4	0	79	96	0	44	7.9	82	1.0	11
7-7	W	1200	1.8	26	70	80	7.5	0	64	60	-	11	6.7	82	2.2	27
7-15	Th	1645	1.4	29	100	30	7.9	0	120	182	-	44	4.9	63	5.0	47
7-26	M	1250	1.2	25	340	320	7.5	0	63	102	-	25	7.1	85	1.3	11
7-27	T	0645	1.4	21	220	200	7.4	0	67	106	-	26	7.1	79	1.2	11
8-4	W	1450	2.0	27	170	100	7.3	0	71	26	-	13	6.3	78	1.0	5
8-16	M	1925	1.0	22	65	25	7.5	0	69	74	-	25	6.8	77	0.9	6
8-27	F	1010	1.0	15	44	15	7.4	0	74	80	-	33	7.0	69	0.9	6
Average			1.6	23	140	80	7.0 to 7.9	0	74	85	-	26	6.9	79	1.7	18

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formalde- hyde ppm
1954						
6-9	W	1130	2,400	0	0	0
6-15	T	0930	7,500	0	0	0
6-17	Th	0900	15,000	0	0	0
6-21	M	1415	9,300	0	0	0
6-30	W	0744	2,400	0	0	0
7-7	W	1200	2,100	-	-	-
7-15	Th	1645	93,000	-	-	-
7-26	M	1250	430	-	-	-
7-27	T	0645	15,000	-	-	-
8-4	W	1450	24,000	0	0	0
8-16	M	1925	930	-	-	-
8-27	F	1010	24,000	-	-	-
Average			16,000			

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 99 - Located on Richland Creek below point of effluent discharge from High Point's Drainage Area (sq.mi.) 16.3
Eastside sewage and industrial waste treatment plant and 0.2 of a mile above
Deep River.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. ppm Sat.	5-Day B.O.D. ppm 20°C	lbs/day 25°C
1954	W	1150	6.6	25	110	20	6.8	0	110	-	129	3.2	-	-
6-9	T	1000	5.1	24	120	6	7.1	0	78	-	107	4.2	6.3	220
6-15	Th	0930	5.2	24	340	100	7.0	0	60	-	70	2.9	10	350
6-17	M	1455	8.4	24	130	20	7.1	0	74	0	112	3.8	26	1,500
6-21	W	0645	3.2	22	100	15	7.2	0	66	0	183	2.9	5.8	1,140
6-30	W	1223	6.7	26	70	25	7.0	0	83	-	112	2.2	7.4	330
7-7	M	1150	6.5	25	55	10	6.8	0	81	-	111	2.2	-	-
7-12	Th	1620	7.6	28	120	20	7.4	0	88	0	181	3.1	9.6	490
7-15	M	1340	6.9	26	120	140	7.2	0	128	-	94	5.1	13	610
7-26	T	0605	3.7	24	100	20	7.3	0	90	-	122	3.3	6.4	160
7-27	W	1810	8.0	27	140	120	7.1	0	98	-	218	2.4	-	-
8-4	M	0950	4.1	25	55	10	7.1	0	81	-	56	3.4	13	360
8-16	F	0815	3.0 est.	26	180	20	7.1	0	70	0	95	1.8	6.9	140
8-27														
Average			5.8	25	130	40	6.8 to 7.4	0	85		122	3.4	10	430

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formalde- hyde ppm
1954	W	1150	240,000	0	0	0
6-9	T	1000	430,000	0	0	0
6-15	Th	0930	1,500,000	-	0	-
6-17	M	1455	2,400,000	0	0	0
6-21	W	0645	430,000	0	0	0
6-30	W	1223	430,000	0	0	0
7-7	M	1150	430,000	0	0	0
7-12	Th	1620	930,000	-	0	0
7-15	M	1340	2,400,000	0	0	0
7-26	T	0605	150,000	0	0	0
7-27	W	1810	430,000	0	0	0
8-4	M	0950	93,000	0	0	0
8-16	W	0815	240,000	0	0	0
8-27	F			0	0	0

Average 780,000

DEEP RIVER DRAINAGE AREA

Station 100 -- Located on Deep River just below dam at old hydro station 1.6 miles below Sta. 97 on this river and 0.7 of a mile below Sta. 99 on Richland Creek. Drainage Area (sq.mi.) 96.3

Date	Col.	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day ppm	B.O.D. lbs/day 25°C
1954	6-9	W	1230	14	24	100	40	6.9	0	55	128	-	79	7.7	91	-	-
	6-15	T	1035	13	25	120	20	7.2	0	44	60	-	27	7.2	86	5.5	480
	6-17	Th	0955	68*	24*	440*	100*	7.0*	0*	51*	50*	-	56*	6.6*	78*	6.7*	3,080*
	6-21	M	1510	68*	22*	210*	100*	7.2*	0*	46*	47*	-	26*	7.3*	83*	3.5*	1,600*
	6-30	W	0620	14	23	80	40	7.2	0	51	57	-	53	6.1	70	4.0	380
	7-12	M	1230	11	25	50	20	7.4	0	52	59	-	15	8.7	104	3.2	240
	7-15	Th	1600	14	28	130	25	7.8	0	83	87	-	101	5.3	67	11	1,000
	7-26	M	1400	10	25	640	550	7.4	0	53	80	-	80	7.1	85	8.9	600
	7-27	T	0805	12	24	520	270	7.2	0	52	96	-	56	6.2	73	9.0	730
	8-4	W	1825	12	26	320	80	7.3	0	57	84	-	56	5.9	72	5.9	480
	8-16	M	1035	24*	26*	130*	25*	7.5*	0*	62*	61*	-	70*	6.8*	83*	11*	1,800*
	8-27	F	1055	11	26	140	22	7.2	0	77	60	0	102	5.9	72	5.5	410
Average				12	25	230	120	6.9 to 7.8	0 to 0	58	79		63	6.7	80	6.6	540

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
1954	6-9	W	1230	430,000	-	-	-
	6-15	T	1035	230,000	-	-	-
	6-17	Th	0955	2,400,000*	-	-	-
	6-21	M	1510	430,000*	-	-	-
	6-30	W	0620	730,000	-	-	-
	7-12	M	1230	43,000	0	0	0
	7-15	Th	1600	4,300,000	-	0	0
	7-26	M	1400	24,000	0	0	0
	7-27	T	0805	430,000	0	0	0
	8-4	W	1825	240,000	0	0	0
	8-16	M	1035	430,000*	0*	0*	-
	8-27	F	1055	2,400,000	0	0	0
Average				980,000	0	0	0

* Excluded from average, unseasonable flow.

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 101 - Located on Deep River 3.4 miles below Station 100 on this river and short distance below Coltrane's Mill dam which provides intermittent regulation of river.

Drainage Area (sq. mi.) 124

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954	W	1325	50*	23*	110*	30*	7.0*	0*	103*	136*	39*	6.3*	72*	3.4*	1,100*	15,000*
6-9	T	1115	7.4	26	210	30	7.4	0	47	60	44	8.1	99	4.3	210	4,300
6-15	Th	1025	56*	24*	2,540*	160*	6.7*	0*	23*	27*	15*	4.8*	56*	4.4*	1,700*	24,000*
6-21	M	1540	81*	22*	340*	80*	7.3*	0*	40*	35*	13*	7.6*	86*	2.5*	1,400*	4,300*
6-30	W	0545	6.4	23	65	50	7.1	0	54	60	75	4.2	71	3.8	160	2,400
7-8	Th	0930	7.8	25	70	80	7.3	0	52	59	52	6.0	71	4.1	220	9,300
7-12	M	1310	9.2	25	44	50	7.4	0	47	51	22	8.0	95	2.2	140	930
7-26	M	1445	8.1	26	1,120	600	7.3	0	32	66	28	6.4	78	5.5	300	7,300
7-27	T	0720	8.1	23	780	230	7.2	0	40	80	35	5.7	66	3.0	160	4,300
8-4	W	1645	8.5	26	440	300	7.1	0	42	75	30	5.6	68	3.2	180	2,400
8-16	M	1100	7.8	25	400	80	7.3	0	52	63	51	6.4	76	4.1	220	9,300
8-27	T	1115	7.1	26	520	140	7.3	0	36	59	18	6.9	84	2.3	110	2,400
8-30	M	1825	70*	25*	540*	80*	6.9*	0*	32*	40*	5*	7.1*	85*	2.4*	1,100*	24,000*
Average			7.8	25	400	170	6.7 to 7.4	0	45	64	39	6.4	79	3.6	190	4,700

* Excluded from average as water was subject to extreme regulation and/or unreasonable flow.

Station 102 - Located on Deep River at Reynolds Road at Randleman above untreated sewage and industrial waste discharge from Commonwealth Hosiery Company.

Drainage Area (sq. mi.) 173

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-10	Th	1250	53*	25*	2,700*	1,300*	7.2*	0*	36*	50*	16*	4.9*	58*	6.3*	2,300*	240,000*
6-16	W	1010	50*	26*	320*	70*	7.2*	0*	50*	51*	51*	6.2*	76*	2.9*	980*	360*
6-23	W	0755	21	23	460	200	7.2	0	40	37	11	6.6	76	2.0	280	1,200
7-2	F	0820	18	26	170	50	7.5	0	55	54	61	5.4	78	2.3	280	430
7-19	M	1605	24	28	240	60	7.5	0	55	54	57	6.9	87	2.0	320	230
7-28	W	0615	30	23	1,600	900	7.3	0	37	37	15	5.6	64	1.7	340	7,300
7-29	Th	1135	21	26	600	500	7.3	0	39	46	16	5.2	63	4.1	580	1,500
8-19	Th	1340	22	26	600	160	7.4	0	47	58	42	7.1	87	2.0	300	2,400
8-24	T	1810	38	26	2,440	550	7.3	0	35	70	19	6.4	78	2.1	540	4,300
Average			25	25	880	350	7.2 to 7.5	0	44	51	32	6.3	76	2.3	380	2,500

DEEP RIVER DRAINAGE AREA

Drainage Area (sq.mi.) 175

Station 103 - Located on Deep River below untreated sewage and industrial waste from Commonwealth Hosiery Co. at Randleman and above untreated sewage from Cone Mills Corp.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Fenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. % ppm	5 Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954	Th	1330	53*	26*	3,200*	1,300*	7.1*	0*	35*	15*	5.7*	7.1*	2,500*
6-10	W	1030	50*	27*	320*	80*	7.3*	0*	51*	49*	7.3*	3.9*	1,300*
6-23	W	0820	21	23	500	200	7.3	0	38	10	7.7	2.2	310
7-2	F	0735	18	26	130	40	7.6	0	53	54	7.4	2.4	290
7-19	M	1635	24	29	170	55	8.3	1	50	58	9.8	3.1	500
7-28	W	0600	30	23	1,460	800	7.2	0	37	13	6.6	1.6	320
7-29	Th	1200	21	28	1,100	800	7.4	0	42	16	7.8	4.7	670
8-19	Th	1355	22	23	520	160	7.6	0	46	42	8.0	2.4	360
8-24	T	1600	38	27	2,340	40	7.5	0	36	27	7.1	3.4	870
8-30	M	1925	60*	25*	1,120*	250*	7.3*	0*	29*	10*	6.6*	3.0*	1,200*
Average			25	26	880	300	7.1 to 8.3 (usually)	0	43	31	7.8	2.8	470

* Excluded from average as water was subject to upstream regulation and/or unreasonable flow.

Station 104 - Located on Deep River below untreated sewage from Cone Mills Corp. at Randleman and above point of effluent discharge from Randleman's sewage and industrial waste treatment plant.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Fenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. % ppm	5 Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-10	Th	1410	47*	26*	4,200*	1,300*	7.2*	0*	33*	15*	5.5*	5.7*	1,800*
6-16	W	1045	56*	27*	340*	90*	7.4*	0*	48*	45*	7.3*	2.2*	830*
6-23	W	0840	21	23	500	160	7.3	0	40	10	6.8	2.0	280
6-28	M	1345	23	28	140	60	8.3	0	48	19	9.5	3.9	610
7-2	F	0720	19	25	130	50	7.4	0	53	50	5.7	1.8	230
7-19	M	1650	22	28	2,100	800	8.2	0	60	59	9.4	3.1	460
7-28	W	1305	20	26	1,700	1,000	7.3	0	38	14	7.2	7.8	1,100
7-29	Th	1525	30	29	540	160	7.4	0	39	15	6.9	3.7	750
8-19	Th	1435	21	26	2,140	350	7.5	0	43	33	7.5	1.6	230
8-24	T	1855	24	27	1,040	370	7.4	0	37	29	6.7	2.0	320
Average			23	27	1,040	370	7.2 to 8.3	0	45	29	7.5	3.2	500

* Excluded from average as water was subject to upstream regulation and for unreasonable flow.

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station No. 105C (Old WL5) - Located on Polecat Creek at Randleman's intake. Drainage Area (sq. mi.)

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Tur- bid- ity		pH Range		Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. %		5 Day B.O.D. lbs/day 20°C	Coliform M. P. N. per 100 ml.
						ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	Sat.	ppm 25°C	
8-13	F	0925		25	780	30		6.8	0	24		24	3	5.8	68	3.6	150
8-19	Th	1330		29	660	180		7.2	0	29		38	3	7.7	99	2.3	73
8-24	T	1640		29	540	100		7.8	0	27		25	2	8.8	113	2.2	36
Average				28	660	100		6.8 to 7.8	0	27		29	3	7.4	93	2.7	86

Station 106 - Located on Polecat Creek below dam of Randleman water supply and 1.0 mile above Deep River to define inflow conditions. Drainage Area (sq. mi.) 52.0

6-18	F	1010	-	22*	2,920*	600*	7.6*	0*	28*	30*	3*	8.2*	93*	2.3*	-	15,000*
6-23	W	0920	1	25	1,560	500	7.2	0	22	20	1	7.4	88	2.0	14	930
7-2	F	0650	0.6	25	520	160	7.3	0	27	24	4	6.8	81	2.6	11	93
7-12	M	1350	1.1	25	340	110	7.7	0	34	27	2	7.3	87	2.2	16	150
7-19	M	1725	1.1	28	160	55	7.6	0	33	36	1	7.0	89	1.7	13	230
7-28	W	1045	1.1	28	160	60	7.4	0	35	32	0	7.1	90	1.5	11	430
7-29	Th	1245	1.1	30	260	180	7.4	0	38	47	1	6.8	89	1.2	9	2,400
8-19	Th	1500	1.3	26	920	220	6.5	0	29	31	1	3.8	46	1.7	15	2,400
8-24	T	1840	1.6	25	720	200	6.7	0	35	32	9	3.2	38	1.7	18	1,100
Average			1.1	27	580	190	6.5 to 7.7	0	32	31	3	6.2	76	1.8	13	970

* Excluded from average as medium stage flow could not be defined.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 107 - Located on Deep River 1.4 miles below Station 105 on this river just below dam of Leward Cotton Mills, Inc., at Worthville and above untreated sewage and slasher waste from these mills. Drainage Area (sq. mi.) 231

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954	Th	1530	48*	25*	640*	320*	7.6*	0*	39*	48*	16*	7.4*	94*	6.5*	2,100*	93,000*
6-10	W	1150	67*	28*	400*	120*	7.6*	0*	45*	44*	32*	7.7	92	3.5*	1,600*	24,000*
6-23	W	0940	29	25	680	220	7.5	0	39	35	13	7.7	88	3.4	670	93,000
7-2	F	0635	17	25	210	70	7.4	0	46	41	19	7.4	104	3.2	370	4,300
7-19	M	1745	22	28	65	50	8.8	7	51	52	46	8.2	87	6.8	1,000	24,000
7-28	W	0535	26	23	540	320	7.3	0	39	42	25	7.6	95	3.0	530	24,000
7-29	Th	1420	12	27	580	300	7.9	0	43	47	24	7.7	91	4.5	360	93,000
8-19	Th	0830	24	26	920	200	7.2	0	35	46	12	7.5	94	1.2	190	430,000
8-24	T	1535	27	26	560	200	7.6	0	44	43	45	7.7	94	5.7	1,000	430,000
Average			22	26	500	190	7.2 to 8.8	usually	42	44	26	7.7	93	4.0	590	160,000

* Excluded from average as water was subject to upstream regulation and for unseasonable flow.

Station 108 - Located on Deep River 2.5 miles below the untreated sewage and slasher waste from Leward Cotton Mills, Inc. and above Hasket Creek receiving both treated and untreated sewage and industrial waste from Asheboro. Drainage Area (sq.mi.) 239																
6-22	T	1005	57	24	580	180	7.2	0	36	32	21	5.4	64	3.1	1,200	2,400
6-29	T	0630	36	23	240	100	7.1	0	38	36	11	6.1	70	3.0	730	2,400
7-6	T	1645	33	30	90	25	9.5	16	47	42	28	12.3	162	9.4	2,100	2,400
7-14	W	0800	14	25	110	60	7.4	0	52	49	45	6.2	74	5.0	470	93,000
7-21	W	1200	43	27	65	35	8.6	4	51	63	35	11.0	136	5.8	1,700	9,300
7-22	Th	0850	46	24	70	50	7.9	0	49	61	40	7.3	86	3.6	1,100	12,000
7-30	F	0555	46	25	300	200	7.5	0	35	39	24	7.9	94	2.1	650	9,300
8-2	M	1540	43	28	320	240	8.3	0	43	38	19	9.5	120	2.7	780	230
8-5	Th	1335	44	28	260	100	8.2	0	43	85	40	9.1	115	3.1	920	2,400
8-10	T	1740	100*	28*	520*	370*	7.8*	0*	46*	44*	36*	8.0*	101*	4.4*	3,000*	93,000*
Average			40	26	230	110	7.1 to 9.5	usually	44	49	29	8.3	100	4.2	1,100	15,000

* Excluded from average, unseasonable flow.

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 109 - Located on Haskett Creek above Penwood Branch receiving effluent from Asheboro's Imhoff tank. Drainage Area (sq. mi.) 5.62

Date	Col.	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH	Alkalinity Phenol ppm	Hardness as CaCO ₃ ppm	Chlo-ride ppm	D. O. ppm	% Sat.	5 Day ppm	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954	6-18	F	1115	1.4*	20*	520*	320*	7.4*	0*	35*	15*	6.8*	74*	3.6*	34*	9,300*
	6-24	Th	1300	.39	27	440	140	7.8	0	53	13	10.2	126	1.9	5	43,000
	6-29	T	0830	.26	20	280	55	7.2	0	56	24	8.1	88	1.7	3	4,300
	7-6	T	1715	.16	29	210	60	7.9	0	52	11	9.3	119	2.8	3	9,300
	7-8	Th	0815	.24	22	170	120	7.3	0	57	18	4.7	53	2.7	4	24,000
	7-30	F	0705	.14	22	460	250	6.9	0	48	8	3.1	35	2.0	2	7,300
	8-2	M	1500	.46	30	320	180	7.4	0	42	6	9.3	122	2.6	8	9,300
	8-5	Th	0900	.31	23	1,380	650	7.1	0	38	25	5.5	63	2.7	6	2,400
	8-10	T	1845	.76	24	3,900	650	6.7	0	21	18	5.5	65	3.5	18	930,000
	10-13	W	1000	.08	21	280	50	7.2	0	58	6	5.1	57	2.8	2	430
Average				.31	24	820	240	6.7 to 7.9	0	47	14	5.8	81	2.5	6	110,000

* Excluded from average, unseasonable flow.

Station 110 - Located on Penwood Branch below point of effluent discharge from Asheboro's Imhoff tank on this branch. Drainage Area (sq. mi.) 1.53

6-18	F	1230	.57	22	280	180	7.6	0	165	48	36	1.2	14	> 79#	> 310#	110,000,000
6-24	Th	1035	.40	23	-	-	7.1	0	201	91	42	0.0	0	270	730	43,000,000
6-29	T	0935	.30	23	780	200	7.1	0	229	67	41	0.7	8	200	410	4,300,000
7-8	Th	0845	.46	24	2,820	1,300	6.9	0	169	87	40	0.9	11	520	1,600	2,400,000
7-14	W	1230	.20	27	880	300	7.2	0	217	46	46	0.0	0	300	410	930,000
7-30	F	0729	.15	22	720	450	7.0	0	124	70	24	0.2	2	-	-	24,000,000
8-2	M	1850	.30	26	420	400	7.4	0	162	57	28	1.4	17	170	340	4,300,000
8-5	Th	1515	.20	26	960	600	7.2	0	206	77	49	0.0	0	200	270	2,100,000
8-10	T	1645	.20	25	1,960	1,400	7.2	0	138	70	32	0.0	0	150	200	93,000,000
10-13	W	1130	.45	24	560	350	7.3	0	301	112	47	0.0	0	250	760	24,000,000
Average			.32	24	1,040	600	6.9 to 7.6	0	191	73	39	0.4	5	260	590	31,000,000

Excluded from average, indeterminate.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 111 - Located on Penwood Branch below Station 110 on this branch and
0.1 of a mile above Haskett Creek. Drainage Area (sq. mi.) 4.26

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Phenol, ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-18	F	1045	1.06*	20*	240*	25*	7.6*	0*	64*	36*	8*	4.1*	45*	4.7*	34*	43,000*
6-24	Th	1245	.61	22	160	100	7.5	0	108	40	24	3.1	35	6.3	26	240,000
6-29	T	0820	.61	19	180	55	7.5	0	136	52	21	2.4	26	11	45	730,000
7-6	T	1710	.56	26 est.	160	20	9.0	8	42	38	19	3.3	40	6.4	24	3,600
7-14	W	0650	.34	22	160	120	7.3	0	123	53	28	1.8	20	-	-	9,300
7-30	F	0910	.16	22	160	160	7.5	0	136	85	30	1.6	18	-	-	24,000
8-2	M	1655	.46	25	140	60	7.5	0	145	60	33	3.2	38	69	210	11,000
8-5	Th	1440	.28	25	1,080	450	7.2	0	59	67	24	3.3	39	11	21	24,000
8-10	T	1855	.46	24	1,380	350	7.2	0	68	47	19	2.0	24	22	68	2,400,000
10-13	W	1100	.46	20 est.	200	20	7.4	0	249	67	35	2.0	22	7.7	24	43,000
Average			.44	23	400	150	7.2 to 9.0	0 usually	118	57	26	2.5	29	20	60	390,000

* Excluded from average, unseasonable flow.

DEEP RIVER DRAINAGE AREA

Station 112 -- Located on Haskett Creek 0.4 of a mile below Station 111 on Penwood Branch. Drainage Area (sq.mi.) 9.9

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chrom. Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5-Day B.O.D. ppm 20°C	lbs/day 25°C
1954	6-18	F	1130	2.4*	20*	1,220*	180*	7.5*	0*	46*	43*	-	13*	5.8*	63*	4.8*	78*
	6-24	Th	1315	1.0	25	240	100	7.6	0	89	35	-	21	5.9	70	6.3	43
	6-28	M	1435	.8	25	200	20	7.7	0	114	47	-	25	6.0	71	-	-
	6-29	T	0840	.9	20	140	20	7.5	0	111	46	-	21	4.8	52	9.8	60
	7-6	T	1735	.7	26	160	20	7.5	0	105	43	-	22	4.4	54	6.8	32
	7-8	Th	0755	.4	23	170	30	7.5	0	110	45	-	25	3.5	40	9.6	26
	7-22	Th	1235	1.9	25	6,000	3,500	7.2	0	54	75	-	14	4.5	54	11	140
	7-30	F	0705	.3	22	200	140	7.4	0	110	56	-	27	2.8	32	5.9	12
	8-2	M	1700	.9	26	280	120	7.5	0	121	60	-	25	4.8	59	-	-
	8-5	Th	1445	.6	26	1,280	500	7.1	0	49	63	-	25	4.6	56	20	81
	8-10	T	1850	1.2	24	2,300	1,500	7.0	0	44	50	-	18	4.5	53	17	140
	10-13	W	1010	.5	20	220	30	7.5	0	236	65	-	37	3.9	42	8.2	28
Average				.8	24	1,020	540	7.0 to 7.7	0	104	53	0	24	4.5	53	11	62

* Excluded from average, unseasonable flow.

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formalde- hyde ppm
1954	6-18	F	1130	24,000*	-	-	-
	6-24	Th	1315	24,000	-	-	-
	6-28	M	1435	4,300,000	0	0	0
	6-29	T	0840	430,000	-	0	0
	7-6	T	1735	9,300	-	-	0
	7-8	Th	0755	24,000	-	0	0
	7-22	Th	1235	2,400,000	-	0	0
	7-30	F	0705	9,300	-	0	0
	8-2	M	1700	1,500	-	0	0
	8-5	Th	1445	9,300	-	0	0
	8-10	T	1850	240,000	-	0	0
	10-13	W	1010	7,300	-	0	<.05
Average				680,000			0 usually

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 113 - Located on Haskett Creek below point of discharge of untreated sewage and industrial waste from Asheboro's Haskett Creek outfall and 0.3 of a mile above Deep River.

Drainage Area (sq. mi.) 10.6

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chrom. Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5-Day ppm 20°C	B.O.D. lbs/day 25°C
6-22 1954	T	1200	3.8	24	260	90	7.3	0	91	41	-	48	2.7	32	>32#	>820#
6-24	Th	1345	2.6	25	160	70	7.5	0	106	43	-	41	2.8	33	>28#	>490#
6-28	M	1500	2.4	24	110	30	7.5	0	111	47	-	33	3.6	42	21	340
6-29	T	0800	1.5	20	360	160	7.3	0	162	56	0	90	0.2	2	110	1,100
7-6	T	1650	1.6	26	260	100	7.2	0	132	53	0	60	0.5	6	43	460
7-8	Th	0740	1.0	24	560	160	7.3	0	182	63	0	290	0.0	0	190	1,300
7-22	Th	1250	3.6	25	2,200	1,400	7.2	0	49	68	0	25	6.3	75	17	410
7-30	F	0850	1.0	24	580	320	7.3	0	179	53	0	190	0.0	0	-	-
8-2	M	1835	2.9	26	780	280	7.3	0	183	64	0	154	0.0	0	200	3,900
8-5	Th	0635	1.2	23	1,020	800	7.1	0	138	69	-	154	0.5	6	150	1,200
8-10	T	1115	4.0	24	4,400	3,000	7.2	0	42	85	0	16	7.1	84	22	590
10-13	W	0910	.9	21	660	60	7.3	0	278	78	0	389	0.0	0	290	1,800
Average			2.2	24	940	550	7.1 to 7.5	0	138	62	0	124	2.0	23	120	1,200

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formalde- hyde ppm
6-22 1954	T	1200	4,300,000	-	-	-
6-24	Th	1345	2,400,000	-	-	-
6-28	M	1500	430,000	0	0	0
6-29	T	0800	9,300,000	-	1.3	0
7-6	T	1650	9,300,000	-	0	0
7-8	Th	0740	24,000,000	-	.72	0
7-22	Th	1250	4,300,000	-	0	0
7-30	F	0850	21,000,000	-	2.04	0
8-2	M	1835	24,000,000	-	<.2#	0
8-5	Th	0635	730,000	-	.70	0
8-10	T	1115	2,400,000	-	0	0
10-13	W	0910	>240,000,000#	-	2.8	0
Average			9,300,000		.84	0

Excluded from average, indeterminate.

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 1114 - Located on Deep River 0.7 of a mile below Station 113 on Haskett Creek and Drainage Area (sq. mi.) 251
above point of effluent discharge from North Asheboro and Central Falls
Sanitary District Imhoff tank. (Includes sewage from Burlington Mills Corp.)

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chrom. Hex. ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5-Day B.O.D. ppm	20°C	25°C
1954																
6-22	T	1015	61	24	680	240	7.1	0	34	-	20	3.9	46	3.4	1,400	1,400
6-29	T	0645	37	24	340	80	7.2	0	40	-	12	4.9	58	3.2	800	800
7-6	T	1715	35	31	100	20	9.9	25	46	0	22	14.7	196	7.7	1,800	1,800
7-14	W	0810	17	26	100	20	8.4	2	59	-	44	9.8	120	7.5	860	860
7-21	W	1210	48	27	85	25	7.5	0	57	-	39	8.9	110	6.0	1,900	1,900
7-30	F	0605	47	25	210	100	7.2	0	37	0	29	4.7	56	2.0	630	630
8-2	M	1600	46	28	360	140	7.4	0	40	-	25	7.2	91	5.0	1,600	1,600
8-5	Th	1345	45	28	260	180	8.6	12	43	-	39	4.3	54	6.8	2,100	2,100
8-10	T	1750	110*	28*	420*	250*	7.4*	0*	47*	-	42*	6.7*	85*	2.1*	1,600*	1,600*
Average			42	27	270	100	7.1 to 9.9	5	45		29	7.3	91	5.2	1,400	1,400

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formalde- hyde ppm
1954						
6-22	T	1015	7,500	-	-	-
6-29	T	0645	43,000	0	0	0
7-6	T	1715	9,300	0	0	0
7-14	W	0810	43,000	0	0	0
7-21	W	1210	430,000	0	0	0
7-30	F	0605	240,000	0	0	0
8-2	M	1600	4,300	0	0	0
8-5	Th	1345	43,000	0	0	0
8-10	T	1750	4,300*	0	0	0
Average			103,000			

* Excluded from average, unseasonable flow.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 115 - Located on Deep River below Cox's dam and 1.1 miles below point of effluent discharge from North Asheboro and Central Falls Sanitary District Imhoff tank and above pollution from Cedar Falls area. Drainage Area (sq.mi.) 253

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-22	T	1100	61	24	980	250	7.3	0	34	29	17	7.4	87	3.6	1,500	3,900
6-29	T	0715	37	24	420	120	7.3	0	39	35	16	6.7	79	4.3	1,100	4,300
7-6	T	1740	35	31	200	35	9.2	10	43	37	19	5.0	67	8.2	1,900	360
7-14	W	0825	17	26	70	25	7.9	0	50	50	31	7.1	87	4.6	530	230
7-21	W	1230	48	29	80	20	8.0	0	60	63	50	7.7	99	5.8	1,900	43,000
7-30	F	0625	47	24	160	60	7.3	0	42	46	26	7.0	82	6.5	2,100	2,400
8-2	M	1620	46	29	180	120	7.6	0	39	48	27	6.5	83	4.1	1,300	15,000
8-5	Th	1000	45	26	100	120	7.4	0	47	67	33	6.9	84	3.5	1,100	24,000
8-10	T	1400	110*	26*	230*	80*	7.3*	0*	55*	61*	41*	6.8*	83*	4.7*	3,500*	730,000*
Average			42	27	270	100	7.3 to 9.2	0	44	47	27	6.8	84	5.1	1,400	12,000

* Excluded from average, unseasonable flow.

DEEP RIVER DRAINAGE AREA

Station 116 -- Located on Deep River in canal below dam at Franklinville and below untreated sewage and/or industrial waste from Jordan Spinning Co. and Sapona Mfg. Co. in Cedar Falls and above untreated sewage and industrial waste from Randolph Mills.

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbo. ppm	pH Range	Phenol. ppm	Alkalinity		Hardness as CaCO ₃ ppm	Hex. ppm	Chlor. ride ppm	D. O.		5-Day B.O.D.	
										Total ppm	Total ppm				ppm	% Sat.	ppm 20°C	ppm 25°C
1954	6-22	T	1500	20	26	560	180	7.6	0	39	33	33	-	19	6.0	73	3.6	490
	6-28	M	1050	55	28	360	120	7.5	0	34	33	33	0	20	6.7	85	2.7	1,000
	7-1	Th	1645	25	33	260	60	9.1	8	41	35	35	-	17	6.0	82	3.1	520
	7-8	Th	0710	15	28	140	70	7.5	0	44	36	36	-	19	6.8	86	2.9	290
	7-14	W	0935	100	28	260	80	8.6	2	46	46	46	-	20	11.0	132	5.1	3,400
	7-21	W	1220	40	29	120	30	8.2	0	58	68	68	-	42	8.9	114	3.6	970
	8-3	T	1850	120	29	140	25	7.5	0	40	35	35	-	25	7.1	91	2.6	2,100
	8-6	F	0840	20	27	260	130	7.2	0	43	78	78	-	29	6.3	78	3.8	510
	8-23	M	1135	130	27	140	25	7.3	0	49	64	64	0	43	6.3	78	3.3	2,900
Average				58	28	250	85	7.2 to 9.1	0	44	48	48		26	7.2	92	3.4	1,400

Date	Col.	Day	Time	Coliform M.C.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde	
							ppm	ppm
1954	6-22	T	1500	4,300	-	-	-	-
	6-28	M	1050	230	0	0	0	0
	7-1	Th	1645	43	-	-	0	0
	7-8	Th	0710	2,100	-	-	-	-
	7-14	W	0935	430	-	-	-	-
	7-21	W	1320	230	-	0	0	0
	8-3	T	1850	1,500	-	0	0	0
	8-6	F	0840	2,400	-	0	0	0
	8-23	M	1135	9,300	-	0	0	0
Average				2,300		0	0	0

NOTE: Water is highly regulated at this site, Water is source of industrial water supply for Randolph Mills.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA
Station 117 -- Located on Deep River below untreated sewage and industrial waste from Randolph Mills and 0.2 of a mile above Sandy Creek. Drainage Area (sq. mi.) 286

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chrm. Hex. ppm	Chlo- ride ppm	D. O. % Sat.	5-Day B.O. D. ppm 20° C	lbs/day 25° C
1954															
6-22	T	1345	20	31	460	160	9.3	10	43	33	-	19	73	9.7	1,300
6-28	M	1115	55	27	260	60	7.5	0	39	33	0	19	14	3.5	1,300
7-1	Th	1705	25	31	300	50	9.7	17	40	37	-	19	108	10	1,700
7-8	Th	0615	15	28	100	10	7.3	0	55	38	0	23	11	7.6	770
7-14	W	0955	100	27	55	15	7.6	0	52	50	0	21	22	3.7	2,500
8-3	T	1540	120	30	55	45	7.3	0	46	40	-	26	53	3.3	2,700
8-6	F	0735	25	27	220	100	7.2	0	40	85	-	30	59	3.3	560
8-23	M	1150	130	27	70	20	7.5	0	49	63	0	45	81	3.1	2,700
8-31	T	1740	120	26	1,120	370	6.9	0	35	37	0	16	49	3.2	2,600
Average			68	28	300	90	6.9 to 9.7		44	46	0	24	52	5.3	1,800

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formalde- hyde ppm
1954						
6-22	T	1345	4,300,000	-	-	-
6-28	M	1115	9,300	0	0	0
7-1	Th	1705	240,000	-	0	0
7-8	Th	0615	430,000	-	0	0
7-14	W	0955	43,000	-	0	0
8-3	T	1540	150,000	-	0	0
8-6	F	0735	150,000	-	0	0
8-23	M	1150	43,000	-	0	0
8-31	T	1740	930,000	-	0	0
Average			700,000		0	0

NOTE: Water is highly regulated at upstream dam.

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 118 - Located on Sandy Creek 2.1 miles above unnamed tributary receiving effluent from Liberty's West sewage treatment plant. Drainage Area (sq. mi.) 8.74

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954															
7-8	Th	1515	.7	24	60	25	7.5	0	38	34	8.0	94	1.1	5	2,400
7-13	T	1240	.4	22	60	40	7.4	0	37	30	9.0	102	0.5	1	2,400
7-19	M	0835	0.1	23	160	35	7.3	0	30	34	7.5	86	0.9	1	4,300
7-23	F	0715	2.9*	22*	1,560*	1,000*	6.9*	0*	20*	17*	7.6*	86*	1.8*	35*	430,000*
8-3	T	1700	3.7*	24*	320*	160*	6.6*	0*	26*	23*	7.1*	84*	2.1*	52*	43,000*
8-6	F	1035	1.6	23	130	70	6.9	0	28	59	7.3	84	1.0	11	3,900
8-23	M	1005	1.0	22	65	50	6.9	0	36	33	7.5	85	1.0	7	4,300
8-31	T	1850	.7	22	180	40	7.1	0	40	31	7.3	83	1.2	6	9,300
Average			.8	23	110	45	6.6 to 7.5	0	35	37	7.8	89	1.0	5	4,400

* Excluded from average, unseasonable flow.

Station 119- Located on unnamed tributary below point of effluent discharge from Liberty's West sewage treatment plant and 1.7 miles above Sandy Creek.

7-8	Th	1420	.17	22	60	65	7.1	0	48	46	8	6.8	77	3.8	4	43,000
7-13	T	1220	.16	21	44	35	7.3	0	51	51	8	6.9	77	0.9	1	9,300
7-19	M	0900	.20	22	140	160	7.1	0	58	58	1	4.5	51	>13#	>18#	43,000
7-23	F	0630	.16	21	520*	450*	7.1	0	61	43	8	3.8	42	>13#	>14#	43,000
8-3	T	1615	.14	24	1,380*	500*	6.7	0	31	32	3	6.0	71	5.7	5	150,000
8-6	F	0535	.14	22	240	150	6.9	0	59	96	14	3.9	44	12	11	24,000
8-23	M	0935	.08	22	100	10	6.8	0	63	53	10	4.0	45	12	6	7,300
8-31	T	1800	.06	22	80	35	7.1	0	70	54	12	3.8	43	12	5	93,000
Average			.14	22	110	75	6.7 to 7.3	0	55	54	8	5.0	56	7.7	5	52,000

Excluded from average, indeterminate.

* Excluded from average as high color and turbidity are due to local runoff.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 120 - Located on Sandy Creek 3.2 miles below Station 119 on unnamed tributary receiving effluent from Liberty's West sewage treatment plant.

Drainage Area (sq.mi.) 23.4

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
7-8	Th	1455	1.1	24	90	35	7.5	0	43	48	5	7.0	82	1.6	12	2,400
7-13	T	1150	.4	22	70	75	7.3	0	41	38	2	7.1	81	1.0	3	230
7-19	M	0920	2.1	23	240	55	7.2	0	38	45	1	6.8	78	0.7	10	9,300
7-23	F	0700	23*	23*	1,840*	1,400*	6.9*	0*	24*	24*	1*	5.8*	67*	2.8*	430*	43,000*
8-3	T	1635	35*	25*	1,080*	400*	6.5*	0*	23*	24*	2*	6.2*	74*	2.4*	570*	24,000*
8-6	F	1055	4.0	23	220	80	7.1	0	33	74	5	6.6	76	1.1	30	4,300
8-23	M	1300	.7	24	320	40	6.6	0	34	46	3	6.4	75	0.6	3	1,500
8-31	T	1835	.3	23	160	20	7.2	0	46	42	4	6.7	77	1.0	2	930
Average			1.4	23	180	50	6.5 to 7.5	0	39	49	3	6.8	78	1.0	10	3,100

* Excluded from average, unseasonable flow.

Station 121 - Located on Sandy Creek 6.3 miles below Station/ on this creek and above back-water from Ramsey's water supply dam.

120

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-8	Th	1545	1.2	24	460	15	7.3	0	39	32	6	6.6	78	1.6	13	9,300
7-13	T	1130	1.7	21	130	50	7.3	0	40	49	2	7.2	80	0.5	6	230
7-19	M	0945	4.0	24	2,200	700	7.2	0	23	49	1	6.9	81	1.7	46	24,000
7-23	F	0745	.	23*	1,660*	1,800*	7.4*	0*	29*	26*	1*	8.0*	92*	1.8*	-	43,000*
8-3	T	1735	.	24*	1,320*	2,500*	6.5*	0*	15*	20*	5*	7.6*	89*	3.4*	-	93,000*
8-6	F	0605	5.5	24	1,280	500	7.0	0	22	104	7	6.8	80	1.6	59	9,300
8-23	M	1340	2.8	24	260	55	6.9	0	25	41	11	7.3	86	2.0	38	2,300
8-31	T	1225	2.8	23	2,540	1,000	6.9	0	23	40	4	7.1	82	1.6	30	2,400
Average			3.0	23	1,140	380	6.5 to 7.4	0	29	53	5	7.0	81	1.5	32	7,900

* Excluded from average, unseasonable flow, rating not defined.

Station 121A (Old W 16)-- Located on Sandy Creek at Ramsey's intake 1.7 miles above
 Drainage Area (sq. mi.)
 Deep River.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. %	5 Day B.O.D. ppm	Coliform M. P. N. per 100 ml.
1954	F	0955		22	880	250	7.1	0	22	21	1	7.1	2.0	430
8-13	Th	1530		25	260	30	7.5	0	31	34	1	8.5	2.1	430
8-19	T	1730		26	460	140	7.4	0	42	48	2	7.8	1.5	430
Average				24	540	140	7.1 to 7.5	0	32	34	1	7.8	1.9	430

Station 122 -- Located on Deep River above points of effluent discharge from Ramsey's
 two sewage treatment plants.

7-13	T	1000	18	27	80	30	7.4	0	49	41	16	4.6	3.1	380	9,300
7-15	Th	0905	21	28	70	20	7.5	0	54	44	18	4.2	3.6	510	240,000
7-21	W	0555	44	26	35	20	7.5	0	52	49	24	5.6	2.6	770	2,400
8-3	T	1800	127	28	360	300	7.2	0	45	41	25	6.3	5.9	5,100	9,300
8-6	F	0750	28	26	180	100	7.0	0	43	76	34	4.7	2.8	530	930,000
8-23	M	1205	136	27	95	20	6.9	0	51	46	38	4.4	3.2	2,900	3,000
8-31	T	1605	124	28	1,180	450	6.9	0	32	33	19	4.1	2.6	2,200	2,400
9-1	W	1400	56	25	1,120	500	6.9	0	34	47	18	3.1	2.0	760	30,000
Average			69	27	400	180	6.9 to 7.5	0	45	47	24	4.6	3.2	1,600	150,000

NOTE: Highly regulated stream at upstream points.

Station 123 -- Located on Deep River below points of effluent discharge from
 Ramsey's two sewage treatment plants.

Ramseur's two sewage treatment plants.															
7-13	T	1030	18	25	85	20	7.3	0	46	38	15	5.5	1.6	190	43,000
7-15	Th	0945	21	27	660	25	7.5	0	54	41	17	4.7	2.5	350	93,000
7-21	W	0740	44	27	70	140	7.2	0	53	48	21	4.3	2.8	830	43,000
8-3	T	1825	127	27	130	100	7.2	0	50	45	28	5.6	3.5	3,000	93,930
8-6	F	0625	28	26	540	350	7.1	0	39	60	24	3.9	1.9	360	240,000
8-23	M	1400	136	27	70	35	7.3	0	44	47	37	5.8	3.0	2,800	43,000
8-31	T	1200	124	25	1,460	480	6.9	0	31	48	19	4.6	2.9	2,400	43,000
9-1	W	1545	56	25	840	300	6.8	0	31	41	22	4.1	1.9	720	93,000
Average			69	26	400	180	6.8 to 7.5	0	44	46	23	4.8	2.5	1,300	75,000

NOTE: Highly regulated stream at upstream points.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 124 -- Located on Deep River 2.9 miles below Station 123 also on this river. Drainage Area (sq. mi.) 390

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5-Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954															
7-13	T	0935	19	25	90	55	7.3	0	44	12	5.1	61	1.1	140	430
7-15	Th	1025	40	27	90	35	7.5	0	49	16	5.2	64	2.3	620	4,300
7-21	W	0820	38	25	70	70	7.3	0	48	15	4.8	57	2.0	510	2,400
8-11	W	0530	130*	25*	540*	300*	7.2*	0*	37*	17*	5.0*	60*	2.1*	1,800*	43,000*
8-26	Th	1600	15	29	110	60	8.6	5	50	32	11.2	144	4.5	460	3,000
9-2	Th	1135	38	23	1,020	360	6.9	0	36	16	4.1	47	1.7	440	9,300
9-10	F	0935	17	25	520	60	6.9	0	46	15	3.6	43	2.6	300	730
10-25	M	1305	55*	15*	140*	55*	6.8*	0*	26*	7*	8.3*	81*	1.9*	710*	4,300*
Average			28	26	320	110	6.8 to 8.6	0 usually	46	18	5.7	69	2.4	410	3,400

* Excluded from average, unseasonable flow.

Station 125 -- Located on Deep River 2.5 miles below Station 124 on this river a short distance below untreated sewage from Enterprise Mfg. Co. at Coleridge and 2.3 miles above Richland Creek.

Drainage Area (sq. mi.) 398

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5-Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-13	T	0910	18	25	120	35	7.3	0	46	15	6.2	74	1.4	170	230
7-15	Th	1050	64	27	100	35	7.6	0	46	12	6.7	83	1.4	600	930
7-21	W	0840	50	26	60	270	7.5	0	53	14	6.4	78	2.6	880	930
8-11	W	0630	--	25*	300*	140*	7.0*	0*	41*	19*	5.2*	62*	1.7*	--	1,500*
8-26	Th	1520	30	29	70	10	9.1	9	53	35	13.0	167	5.0	1,000	930
9-2	Th	1235	88	24	680	220	7.0	0	38	22	4.0	47	2.1	1,200	9,300
9-10	F	1000	15	26	540	120	7.0	0	40	15	5.4	66	3.1	310	7,300
10-25	M	1800	--	14*	180*	90*	6.8*	0*	25*	7*	9.2*	88*	2.2*	--	2,400*
Average			44	26	260	120	6.8 to 9.1	0 usually	46	19	7	86	2.6	690	3,300

* Excluded from average, unseasonable flow and rating undefined.

DEEP RIVER DRAINAGE AREA

Station 126 -- Located on Richland Creek near Coleridge 0.8 of a mile above Deep River Drainage Area (sq. mi.) 59.6 to define inflow conditions.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total as CaCO ₃ ppm	Hardness ppm	Chlo- ride ppm	D. O. %	5-Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
1954														
7-20	T	0830	4.3	24	240	50	7.2	0	32	26	1	7.2	1.4	930
8-11	W	0555	4.6	23	660	500	7.2	0	31	22	1	7.0	0.8	930
8-26	Th	1545	1.6	29	680	160	7.5	0	26	27	1	7.6	0.9	930
9-2	Th	1200	4.3	21	1,960	400	6.7	0	16	21	2	7.7	1.6	4,300
9-10	F	0950	0.4	23	1,080	300	6.8	0	22	70	0	6.2	1.1	93
Average			3.1	24	920	280	6.7 to 7.5	0	25	33	1	7.1	1.2	1,400

Station 127	-- Located on Deep River 3.1 miles above Bear Creek receiving pollution from Robbins and vicinity.														Drainage Area (sq. mi.) 608
7-20	T	0910	34	27	210	30	7.5	0	36	31	2	6.8	1.7	390	430
8-11	W	0710	66*	25*	260	55*	7.4*	0*	41*	32*	15*	6.3*	1.1*	490*	930*
8-26	Th	1500	47	31	140	35	8.8	5	44	37	28	10.3	2.3	730	240
9-2	Th	1300	44	26	160	40	7.5	0	52	41	35	8.8	1.1	330	4,300
9-10	F	1035	42	26	640	140	6.9	0	35	62	15	5.8	1.9	540	430
10-25	M	1730	94*	16*	180*	80*	6.9*	0*	22*	19*	6*	9.4*	1.3*	820*	2,400*
Average			42	28	280	60	6.9 to 8.8	0	42	43	16	7.9	1.8	500	1,400

*Excluded from average, unseasonable flow.

Station 128	-- Located on Bear Creek below point of discharge of untreated industrial waste from Luck's, Inc. and above discharge of untreated sink drainage from Monroe Tourist Home Lunch room.														Drainage Area (sq. mi.) Negligible
8-11	W	1115	0.010	29	500	350	7.0	0	150	69	77	0.0	470	32	>24,000,000#
8-24	T	0900	.045	30	1,380	450	7.1	0	81	40	9	1.0	37	11	2,400,000
8-26	Th	1910	0	No flow as Luck's, Inc. shut down	zero flow omitted from average.										
9-2	Th	1715	.001	27	380	180	6.8	0	112	48	6	0.0	23	1	93,000
9-3	F	0710	.003	19	240	30	7.1	0	38	29	5	0.0	-	-	4,300
Average			0.014	26	620	250	6.8 to 7.1	0	95	46	24	0	180	15	830,000

usually

Excluded from average, indeterminate.

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 129 -- Located on Bear Creek 1.1 miles below Station 128 on this creek and below Monroe Tourist Home and several houses adjacent to creek. Drainage Area (sq. mi.) 1.35

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total as CaCO ₃ ppm	Hardness ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20° C	lbs/day 25° C	Coliform M.P.N. per 100 ml.
1954 8-11	W	1055	.05	23	80	70	7.2	0	39	21	12	7.4	85	0.9	1	4,300
8-24	T	0920	.03	22	160	25	7.2	0	31	23	7	7.1	81	1.1	1	15,000
8-26	Th	1855	.05	24	230	40	7.1	0	35	22	2	6.2	73	2.0	1	43,000
9-2	Th	1700	.02	20	70	15	7.1	0	45	34	6	7.9	86	2.0	1	240,000
9-3	F	0645	.02	18	75	25	6.7	0	83	45	13	8.1	84	> 11#	> 1#	240,000
Average			.03	21	120	35	6.7 to 7.2	0	47	29	8	7.4	82	1.5	1	110,000

Excluded from average, indeterminate.

Station 129A -- Located on Cabin Creek 10 feet above effluent ditch receiving sewage effluent from Cardor's sewage treatment plant. Drainage Area (sq. mi.) 1.50 (129 A and 129 B)

1-8-57	T	1130	.18	8	120	5	6.4	0	11	18	6	9.4	79	1.6	2	11,000
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ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 129 A-1 - Located on effluent ditch to Cabin Creek below Candor's sewage treatment plant. Drainage Area (sq. mi.)

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
							Suspended	Dissolved		Phenol. ppm	Total ppm		
11-1-56	Th	0800	.06 for 18*	18*	580*	80*	159*	321*	7.1*	0*	124*	34*	29*
1-8-57	T	1130 1215	6 hours* .1	13	480	80			7.1	0	145	37	26

Date Collected	Day	Time	D.O. %	5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.
			Sat. ppm	20°C 25°C	
11-1-56	Th	0800 1430	-	240* 24*	-
1-8-57	T	1215	1.8	220 150	> 1,100,000

* Analyses are for composite sample collected over a 6-hour period.
Note: All samples collected under winter temperature conditions.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 129 - Located on Cabin Creek 20 feet below effluent ditch receiving
A-2 sewage effluent from Candor's sewage treatment plant. Drainage Area (sq. mi.)

Date	Col-lected	Day	Time	Dis-charge	Temp. °C	Color ppm	Tur-bidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo-ride ppm	D. O. %	5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.
1-8-1957	T	1200	0.27	9	210	26	0	48	13	7.2	62	42	77	>1,100,000

Station 129 B - Located on Cotton Creek about one mile below point of effluent discharge from Star's Cape Fear River Basin sewage and industrial waste treatment plant. Drainage Area (sq.mi.) Indeterminate

Date	Col-lected	Day	Time	Dis-charge	Temp. °C	Color ppm	Tur-bidity ppm	pH Range	Solids (ppm) Sus-pended	Dis-solved	Total	Alkalinity Phenol ppm	Hardness as CaCO ₃ ppm	Chlo-ride ppm
11-1-1956	Th	0800	1600	0.33 for 9 hours	18	80	40	7.1	12	500	512	0	38	88

Date	Col-lected	Day	Time	D. O. %	5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.
11-1-1956	Th	0800	1600	0	65	2,300,000

Note: Analyses are for a composite sample collected over a 9-hour period under moderate temperature conditions.

DEEP RIVER DRAINAGE AREA

Station 129 C -- Located on Lick Creek about one mile below Biscoe's Cape Fear River Drainage Area (sq. mi.) 140
Basin sewage and industrial waste treatment plant.

Date Col- lected 1956	Day	Time	Ave. Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	Solids (ppm)			pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
							Sus- pended	Dis- solved	Total		Phenol. ppm	Total ppm		
11-2	F #1	0730 to 1230	0.016* for 5 hrs.	16	260	40	38	201	239	7.2	0	142	49	16
11-2	F #2	1230 to 1430	0.085** for 3 hrs.	17	280	100	23	244	267	7.3	0	136	49	16

Date Col- lected 1956	Day	Time	D.O. %	5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.
			ppm Sat.	20°C	25°C
11-2	F #1	0730 to 1230	0	53	1
11-2	F #2	1230 to 1430	0	50	4
					930,000

* Analyses represent composite sample collected over 5-hour period without waste from Biscoe Coca Cola Bottling Co.

** Analyses represent composite sample collected over 3-hour period with waste from Biscoe Coca Bottling Co.

Note: Samples collected under moderate winter temperature conditions.

TABLE 15

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station No. 130 - Located on Cabin Creek below Standard Mineral Co. drainage, some 15 miles below sewage effluents from Candor, Star and Bisbee and 0.4 of a mile above Bear Creek. Drainage Area(sq.mi.) 78.3

Date	Col.	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol ppm	Alkalinity Total as CaCO ₃ ppm	Hardness ppm	Chloride ppm	D. O. %	ppm Sat.	5 Day B.O.D. ppm 20°C	1 Day B.O.D. ppm 25°C	Coliform M.P.N. per 100 ml.
1954																	
7-20	T		0935	9.4*	24*	230*	55*	6.5*	0*	10*	13*	1*	7.0*	62*	1.0*	1.0*	930*
8-11	W		0750	3.2	23	240	160	6.3	0	12	13	5	5.5	63	1.1	24	4,300
8-26	Th		1145	3.7	25	500	120	6.8	0	17	18	2	6.2	74	0.8	20	430
9-2	Th		1335	3.2	21	440	120	6.7	0	18	33	6	7.2	80	1.0	22	93
9-10	F		0535	.5	22	280	35	6.5	0	15	48	2	6.0	68	1.1	4	240
10-26	T		1740	9.0*	13*	42*	25*	6.4*	0*	8*	9*	3*	10.4*	98*	0.5*	30*	430*
Average				2.6	22	360	110	6.3 to 6.8	0	15	28	3	6.2	71	1.0	17	1,300

* Excluded from average, unseasonable flow.

Station No. 131		~ Located on Bear Creek at Robbins' water intake 0.6 of a mile below Sta. 130 on Cabin Creek, 11.1 miles below Sta. 129 on Bear Creek and above point of effluent discharge from Robbins' sewage and industrial waste treatment plant.															Drainage Area(sq.mi.)134	
	T	0955	18*	24*	360*	50*	6.5*	0*	11*	12*	1*	6.6*	78*	1.8*	220*	930*		
7-20	T	0955	18*	24*	360*	50*	6.5*	0*	11*	12*	1*	6.6*	78*	1.8*	220*	930*		
8-11	W	0805	5.6	22	160	220	6.4	0	15	16	2	4.1	47	2.5	95	2,400		
8-26	Th	1200	4.6	27	620	140	6.8	0	18	24	3	5.8	72	1.0	31	930		
9-2	Th	1350	3.5	23	240	140	6.7	0	20	40	3	6.5	75	1.3	31	210		
9-10	F	0555	1.1	22	-	-	6.7	0	22	41	2	5.0	57	1.4	10	150		
10-26	T	1720	24*	13*	90*	20*	6.5*	0*	9*	9*	4*	10.1*	95*	0.2*	32*	730*		
Average			3.7	23	340	170	6.4 to 6.8	0	19	30	3	5.3	63	1.6	42	920		

* Excluded from average, unseasonable flow.

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 136

Station No. 132 - Located on Bear Creek below point of effluent discharge from Robbins' sewage and industrial waste treatment plants.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. lbs/day 20°C	M.P.N. per 100 ml.
1954															Coliform
7-20	T	1030	19*	25*	640*	35*	6.4*	0*	17*	14*	1*	2.1*	25*	11*	240,000*
8-11	W	0825	6	25	180	35	7.2	0	27	17	6	3.1	37	4.4	93,000
8-26	Th	1220	5.5	30	840	250	6.7	0	26	14	6	1.0	13	10	930,000
9-2	Th	1425	4.3	26	460	50	6.7	0	30	31	5	3.6	44	7.2	430,000
9-10	F	0625	1.2	24	-	-	6.9	0	38	38	5	4.5	53	4.3	2,300
10-26	T	1650	30*	15*	90*	20*	6.5*	0*	10*	9*	4*	9.8*	96*	0.4*	240,000*
Average			4.3	26	500	110	6.4 to 7.2	0	30	25	6	3.1	37	6.5	360,000

* Excluded from average, unseasonable flow.

NOTE: During the study Robbins' sewage and industrial waste treatment plant was by-passed from time to time while effecting repairs.

Station No. 133 - Located on Bear Creek 2.9 miles below Station 133 on this creek and Drainage Area (sq. mi.) 142
0.9 of a mile above Deep River.

7-20	T	1055	19*	26*	680*	55*	6.6*	0*	12*	10*	0*	5.7*	69*	2.1*	270*	4,300*
8-11	W	0910	4.2	25	75	120	7.1	0	20	18	5	6.8	81	2.4	68	930
8-26	Th	1315	8.1	28	1,020	280	7.0	0	18	19	5	6.2	78	8.9	490	2,400
9-2	Th	1525	7.0	25	400	250	6.7	0	22	35	5	6.6	79	0.9	43	430
9-10	F	0700	2.2	24	180	20	6.7	0	30	30	2	4.5	53	4.4	65	150,000
10-26	T	1500	30*	15*	120*	25*	6.5*	0*	10*	9*	4*	9.3*	91*	2.7*	550*	24,000*
Average			5.4	26	420	170	6.5 to 7.1	0	23	26	4	6.0	73	4.1	170	38,000

* Excluded from average, unseasonable flow.

NOTE: There is some regulation of water at Reynold's Mill dam 0.2 of a mile upstream from this station.

TABIE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 134 - Located on Deep River 5.2 miles below Station 133 on Bear Creek and 7.4 miles Drainage Area (sq.mi.) 814
below Station 127 on Deep River.

Date	Col- lected	Day	Time	Dis- charge	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																	
7-20	T		1145	62	27	560	50	7.2	0	25	18	7	7.6	94	3.0	1,300	430
8-11	W		0948	48	26	80	100	7.4	0	46	35	27	6.7	82	0.8	260	930
8-26	Th		1400	56	30	280	65	7.9	0	33	27	14	8.2	108	2.9	1,100	1,500
9-2	Th		1600	67	27	440	100	7.5	0	40	43	21	8.5	105	1.8	810	430
9-10	F		0800	25	25	100	15	7.2	0	45	42	25	5.0	60	1.2	200	36
10-25	M		1600	130*	15*	230*	60*	6.9*	0*	17*	18*	5*	10.2*	100*	2.3*	2,000*	9,300*
Average				52	27	300	70	6.9 to 7.9	0	38	33	19	7.2	90	1.9	730	670

* Excluded from average, unseasonable flow.

NOTE: Some regulation of water at Currie Mills, Inc. dam upstream from station.

Station No. 135 - Located on Deep River 7.7 miles below Station 134 on this river and 3.5 miles above McLendon's Creek receiving both treated and untreated sewage from Carthage.

Date	Col- lected	Day	Time	Dis- charge	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																	
7-20	T		1215	69	29	70	25	7.5	0	30	25	7	7.5	96	1.3	610	2,400
8-12	W		1110	65	27	90	50	7.5	0	40	83	21	7.0	86	2.0	880	430
8-25	W		0645	110*	25*	110*	20*	7.2*	0*	32*	25*	11*	6.7*	80*	0.6*	450*	730*
9-7	T		1245	39	29	210	35	7.3	0	43	49	26	7.0	90	0.5	130	73
9-15	W		1520	25	25	55	10	8.3	0	46	40	28	10.0	119	0.9	150	93
9-24	F		0800	21	22	49	7	7.2	0	48	46	27	5.7	65	0.8	110	240
9-27	M		1715	31	25	50	25	7.3	0	44	42	21	8.3	99	0.9	190	430
Average				42	26	90	25	7.2 to 8.3	0	42	48	22	7.6	93	1.1	350	610

* Excluded from average, unseasonable flow.

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 136 - Located on McLendon's Creek above all sources of pollution from Carthage. Drainage Area (sq.mi.) 41.9

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.	Coliform
1954																
8-12	Th	0940	1.1	23	280	50	6.3	15	86	1	2.6	30	2.7	20	730	
8-25	W	0810	0.5	23	620	160	6.3	16	11	2	4.0	46	1.2	4	1,100	
9-7	T	1210	0*	23	140	25	6.6	10	33	4	5.1	-	1.2	-	93	
9-15	W	1610	0*	21	210	35	6.5	12	18	1	4.4	-	2.0	-	240	
9-24	F	1100	0*	20	300	40	6.3	13	18	5	3.7	-	1.8	-	240	
9-27	M	1500	0*	21	260	45	6.6	14	56	7	4.6	-	2.1	-	430	

*The analyses on days of zero flow represent water in a pool with no overflow.

Station 136 A (Old WL9) - Located on Killlets Creek at small lake west of filter plant at Carthage's intake. (No. 2 Lake)

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.	Coliform
9-7	T	1120		30	240	15	6.7	11	28	5	8.5	112	0.9		43	
9-27	M	1630		26	55	25	6.5	10	42	11	8.1	99	1.7		29	
10-5	T	1220		27	70	10	6.6	15	31	6	8.5	105	2.1		2,900	
Average				28	120	15	6.5 to 6.7	12	34	7	8.4	105	1.6		990	

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 137 -- Located on unnamed tributary to Killets Creek about 0.2 of a mile below Carthage's Imhoff tank.

Drainage Area (sq. mi.) .16

Date Collected	Day	Time	Ave. Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)			pH Range	Alkalinity		Hardness Total as CaCO ₃ ppm	Chloride ppm
							Suspended	Dissolved	Total		Phenol ppm	Total ppm		
11-2	F	0900 to 1600	.50 for 8 hours	18	80	35	21	76	97	7.2	51	29	20	

Date Collected 1956	Day	Time	D. O. %	5 Day B.O.D. ppm	Coliform M. P. N. per 100 ml.
			Sat. ppm	20°C	25°C
11-2	F	0900 to 1600	3.0 at 17°C	11	12
					2,300,000

Note: Analyses are for composite sample collected over period of 8 hours under moderate winter temperature conditions.

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Drainage Area (sq. mi.) .20

Station 138 - Located on unnamed tributary to Killets Creek at Brooklyn St. Extension
1500 feet below point of discharge of untreated sewage from Carthage's
West Outfall.

Date Col- lected 1956	Day	Time	Ave. Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm
							Sus- pended	Dis- solved		Phenol. ppm	Total ppm		
11-2	F	0830 to 1530	.27 for 8 hrs.	18	70	20	19	54	73	6.9	18	27	10

Date Col- lected 1956	Day	Time	D. O. %	5 Day B.O.D. ppm	Coliform M.C.P.N. per 100 ml.
			Sat.	20°C	25°C
11-2	F	0830 to 1530	68	7.4	5

at 18°C

Note: Analyses are for composite sample collected over 8-hour/under moderate winter temperature conditions.
period

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 139 -- Located on Killets Creek below untreated sewage from Carthage's West
Outfall, below effluent from Carthage's Imhoff tank and 1.4 miles
above McLendon's Creek. Drainage Area (sq. mi.) 8.74

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
								Phenol.	Total			ppm	% Sat.		
8-12	Th	1015	0*	19*	640*	250*	6.4*	0*	25*	59*	5*	3.9*	42*	1.4*	9,300*
8-25	W	0800	0	No water	to sample.										
9-7	T	1200	0	No water	to sample.										
9-15	W	1620	0	No water	to sample.										
9-24	F	1005	0	No water	to sample.										
9-27	M	1515	0	No water	to sample.										

* Analyses represents sample of water from pool with no overflow.

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 140 - Located on Little Creek near Carthage about one mile below point of discharge from Carthage's North Outfall. Drainage Area (sq. mi.) 0.76

Date Collected	Day	Time	Ave. Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
							Suspended	Dissolved		Phenol. ppm	Total ppm		
11-2 1956	F	0800 1500	2.14 for 8 hrs.	17	60	20	1	52	53	6.9	12	17	5

Date Collected	Day	Time	D. O. %		5 Day B.O.D. ppm		Coliform M.P.N. per 100 mL
			Sat. ppm	77	20°C	25°C	
11-2 1956	F	0800 1500	7.5	77	3.2	15	230,000

Note: Analyses are for composite sample collected over 8-hour period under moderate winter temperature conditions.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 141 -- Located on McLendons Creek below all sources of pollution from Carthage. Drainage Area (sq.mi.) 61.5

Date	Collected	Day	Time	Discharge	Temp.	Color	Turbidity	pH Range	Alkalinity	Hardness	Chloride	D.O.	5 Day B.O.D.	Coliform
				cfs	°C	ppm	ppm		ppm	as CaCO ₃	ppm	% Sat.	ppm lbs/day	M.C.P.N. per 100 ml.
1954														
8-12	Th		1050	1.3	24	440	70	6.4	16	76	2	3.9	2.5	2,400
8-25	W		0720	.6	23	880	100	6.3	16	90	4	5.0	1.4	2,400
9-7	T		1235	0	No water to sample.									
9-15	W		1720	0	No water to sample.									
9-24	F		1000	0	No water to sample.									
9-27	M		1530	0	No water to sample.									

Station 142 -- Located on McLendons Creek 5.2 miles below Station 141 on this creek and 1.4 miles above Deep River. Drainage Area (sq. mi.) 99.0

8-12	Th		1135	1.6	24	170	30	6.5	0	28	47	3.7	1.8	430
8-25	W		0620	.76	22	180	15	6.5	0	15	16	5.3	0.9	230
9-7	T		1335	.23	25	240	50	6.6	0	21	33	5.1	0.9	240
9-15	W		1555	.03	23	400	20	6.7	0	32	24	3.8	1.7	240
9-24	--		0815	0*										
9-27	--		1700	0*										

Average				.66	24	250	30	6.5 to 6.7	0	24	30	4.5	1.3	290
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* Zero flow omitted from average as there was no water to sample.

Station 143 - Located on Deep River 2.6 miles below Station 142 on McLendon's Creek Drainage Area (sq. mi.) 957
and 5.7 miles below Station 135 on Deep River.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954 8-12	Th	1155	67	27	90	30	7.1	0	43	19	5.1	8.9	400	930
8-25	W	0600	111*	27*	70*	10*	6.9*	0*	38*	16*	5.3*	-	-	91*
9-7	T	1345	39	30	110	30	8.5	5	47	24	5.6	5.2	1,400	730
9-15	W	1740	25	25	44	10	8.0	0	48	24	8.6	3.0	510	930
9-24	F	0900	21	24	55	25	6.9	0	49	31	4.1	1.4	200	240
9-27	M	1730	31	25	70	35	7.2	0	49	30	7.6	1.4	290	390
Average			37	26	75	25	6.9 to 8.5	0	47	26	6.2	4.0	560	640

* Excluded from average, unseasonable flow.

Station 144 - Located on Deep River below Carolina Power & Light Company dam at Drainage Area (sq. mi.) 1,011
Carbonton and 5.9 miles below Station 143 on this river.

8-12	Th	1220	55	27	65	35	6.7	0	38	74	5.0	1.7	630	230
8-25	W	0545	52	26	26	3	7.0	0	40	31	5.9	0.9	320	230
9-7	T	1400	18	26	210	45	7.2	0	41	52	5.6	1.4	170	93
9-15	W	1540	53	24	95	20	6.9	0	50	32	4.1	1.1	390	240
9-24	F	0915	72	23	55	10	7.0	0	49	29	4.4	1.5	730	43
9-27	M	1750	25	24	90	50	7.2	0	49	52	7.7	2.0	340	240
Average			46	25	90	27	6.7 to 7.2	0	44	45	5.4	1.4	430	180

NOTE: There is intermittent regulation of water at this station during dry seasons.

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 144 A - Located on Deep River 6 miles above unnamed tributary receiving industrial waste from General Creosoting Company. Drainage Area (sq. mi.)

Date Col. 1957	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity			Acidity			Hardness			Chlo- ride ppm			D. O. % Sat.			5 Day B.O.D. ppm 20°C 25°C			Phe- nols ppm
								Phenol. ppm	Tot. ppm	Mineral ppm	Tot. ppm	as CaCO ₃ ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
1-8	T	1830	270	5	130	15	6.4	0	22					33			3	12.0	94				1.0	1,800		.03

Station 144 A-1 - Located on effluent ditch at General Creosoting Company 300 feet below industrial waste lagoon and 0.3 of a mile above unnamed tributary.

1-8	T	1600	.002	12	10,200	1,600	4.7	-	-	0	370	670	6	-	-	5,600	76	70
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Station 144 A-2 - Located on unnamed tributary 1.5 miles below ditch receiving industrial waste from General Creosoting Co. and 0.2 of a mile above Deep River.

1-8	T	1715	2.5	9	160	15	6.4	0	25				39			9	10.6	92				5.6	94		.4
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Station 145 - Located on Deep River 0.1 of a mile below Station 144 A-2 on unnamed tributary receiving industrial waste from General Creosoting Company.

1-8	T	1730	270	6	140	15	6.4	0	22				32			3	11.6	93				0.7	1,300		.05
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Note: Analyses represent samples collected under winter conditions.

ANALYSIS RECORD DEEP RIVER DRAINAGE AREA

Station 1145 -- Located on Deep River 11.5 miles below Station 1144 on this river, 0.1 of a mile below unnamed tributary receiving waste from General Creosoting Co. and 2.2 miles above Big Buffalo Creek receiving effluent from Sanford's trickling filter sewage and industrial waste treatment plant.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
8-9	M	1515	52	27	90	100	7.8	0	43	49	7	6.7	83	1.5	530	930
9-8	W	1245	56	28	90	20	7.4	0	45	42	39	6.0	76	0.8	300	150
9-14	T	0830	48	22	110	15	7.1	0	43	30	19	5.5	63	0.6	190	9,300
9-22	W	1000	135*	25*	60*	10*	7.0*	0*	50*	34*	24*	4.3*	51*	0.9*	820*	91*
9-30	Th	1800	21	25	60	15	7.2	0	52	31	22	6.2	74	0.9	130	430
10-1	F	0635	27	23	60	7	7.2	0	53	50	25	5.0	57	0.7	130	230
Average			41	25	80	26	7.0 to 7.8	0	47	40	22	5.9	71	0.9	260	220

* Excluded from average, unseasonable flow.

Station 1146 -- Located on Big Buffalo Creek above point of effluent discharge from Sanford's trickling filter sewage and industrial waste treatment plant.

Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-9	M	1620	0*	25*	130*	90*	7.2*	0*	23*	64*	14*	5.4*	64*	2.3*	4,300*
9-8	W	1415	2.1**	25	140	50	6.9	0	28	31	20	6.3	75	2.8	7,300
9-14	T	0935	0	No water to sample.											
9-22	W	1100	0	No water to sample.											
9-30	Th	1900	0	No water to sample.											
10-1	F	0550	0	No water to sample.											

* Analyses represent water from pool with no overflow.

** Flow caused by draining swimming pool into creek.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 147 - Located on Big Buffalo Creek below point of effluent discharge from Sanford's trickling filter sewage and industrial waste treatment plant and above bridge construction at U. S. Highway 421 Drainage Area (sq. mi.) 10.7

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. lbs/day	M.P.N. per 100 ml.
								Phenol. ppm	Total ppm			ppm	% Sat.		
8-9 1954	M	1600	1	25	200	150	7.8	0	141	62	78	0.0	0	130	93,000
9-8	W	1345	3.3*	28	210	40	7.3	0	207	56	68	0.0	0	33	930,000
9-14	T	1005	1.2	21	320	20	7.2	0	163	61	82	0.0	0	66	240,000
9-21	W	1110	1.4	24	140	25	7.2	0	187	62	68	0.0	0	43	2,400,000
9-30	Th	1825	.67	26	230	30	7.2	0	172	56	77	0.0	0	47	93,000
10-1	F	0600	.5	24	160	20	7.0	0	144	61	86	0.3	4	34	150,000
Average			1.3	25	210	50	7.0 to 7.8	0	169	60	77	0	0	59	650,000
usually usually															

* Part of this flow was probably due to draining swimming pool above Station 146.

Station 147 A - Located on Big Buffalo Creek 0.8 of a mile below Station 147 on this creek Drainage Area (sq.mi.) 12.1 and below bridge construction at U. S. Highway 421.															
9-9	Th	1405	2	32	120	35	8.1	0	148	53	51	12.3	166	17	43,000
9-14	T	1010	1.2	21	90	10	7.5	0	122	53	90	3.8	42	25	240,000
9-22	W	1120	1	27	180	20	8.1	0	148	53	56	10.8	133	24	4,300,000
9-30	Th	1835	.67	26	120	7	8.1	0	162	51	81	3.8	46	28	240,000
10-1	F	0610	.5	18	210	40	7.2	0	180	72	79	0.0	0	59	43,000
Average			1.1	25	140	20	7.2 to 8.1	0	152	56	71	6.1	77	31	970,000

DEEP RIVER DRAINAGE AREA

Station 148 - Located on Big Buffalo Creek 4.0 miles below Station 147A on this creek Drainage Area (sq. mi.) 19.6
and 0.7 of a mile above Deep River.

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D.		Coliform M.P.N. per 100ml
									Phenol.	Total					ppm	lbs/day 25°C	
1954									ppm	ppm							
8-9		M	1535	.4	23	120	120	7.6	0	62	54	27	2.7	31	36	97	2,400
9-8		W	1335	.5	22	130	550*	7.2	0	105	49	51	2.0	23	9.4	32	4,300
9-14		T	0950	.4	17	220	20	7.4	0	145	49	64	2.5	26	5.1	14	1,500
9-22		W	1130	.5	20	160	20	7.4	0	162	64	78	2.1	23	5.9	20	2,400
9-30		Th	1810	.2	21	180	20	7.3	0	140	48	57	1.8	20	7.4	10	1,500
10-1		F	0625	.4	20	140	10	7.3	0	143	64	58	1.3	14	4.9	13	430
Average				.4	21	160	40	7.2 to 7.6	0	126	55	56	2.1	23	11	31	2,100

* Excluded from average as high turbidity due to local conditions.

Station 149 - Located on Deep River 2.9 miles below Station 148 on Big Buffalo Creek 5.4 Drainage Area (sq. mi.) 1150
miles below Station 145 on Deep River and 0.4 of a mile above Little
Buffalo Creek.

8-9	M	1755	56	27	90	90	90	7.5	0	42	52	5	7.5	93	2.3	870	240
9-8	W	1225	65	28	85	85	35	7.3	0	41	44	16	6.3	80	1.1	480	230
9-14	T	1025	53	25	140	140	25	7.2	0	45	28	20	6.3	75	2.6	930	430
9-22	W	0815	114*	24*	85*	85*	15*	7.0*	0*	56*	34*	24*	4.2*	49*	1.6*	1200*	930*
9-30	Th	1400	22	26	85	85	20	7.4	0	49	34	21	7.3	89	2.2	330	730
10-1	F	0657	40	24	320	320	25	7.1	0	50	48	25	5.6	66	2.2	590	1,500
Average			47	26	140	140	40	7.0 to 7.5	0	45	41	17	6.6	81	2.1	640	630

* Excluded from average, unseasonable flow.

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 151 B (Old W21 & B6) -- Located on Oldham's Lake at Sanford's emergency intake and near bathing area. Drainage Area (sq. mi.)

Date Collected 1954	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
9-8	W	1800		30	24	55	7.9	0	26	28	8.5	112	1.3		430
10-5	T	1630		29	24	10	8.2	0	31	70	8.7	112	1.7		1,500
10-12	T	0900		24	44	10	7.2	0	33	46	8.0	94	1.3		9.1
Average				28	31	25	7.2 to 8.2	0	30	48	8.4	106	1.4		650

Station 152 -- Located on Little Buffalo Creek 5.5 miles below Station 151 on this creek Drainage Area (sq. mi.) 6.88
1.2 miles above Deep River.

8-9	M	1605	.52	25	500	220	7.0	0	57	59	3.9	46	8.4	29	43
9-8	W	1400	.58	28	500	100	6.7	0	43	28	5.0	63	4.7	18	43
9-14	T	1135	.60	25	420	100	6.7	0	46	26	-	-	3.7	15	43
9-22	W	0945	.36	25	500	65	6.6	0	45	29	5.2	62	3.4	8	43
9-30	Th	1200	.16	25	340	20	6.7	0	50	29	5.2	62	3.1	3	240
10-1	F	0710	.26	23	85	15	6.7	0	34	37	5.2	60	4.0	7	43
Average			.41	25	400	85	6.6 to 7.0	0	46	35	4.9	59	4.6	13	76

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 153 -- Located on Rocky River at Liberty above point of effluent discharge from Liberty's Southwest sewage and industrial waste treatment plant and above untreated industrial waste from Quality Veneer Co. in unnamed tributary. Drainage Area (sq. mi.) 1.81

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																	
8-20	F		0545	0.1	22	1,560	320	6.8	0	27	23	3	3.8	43	3.0	2	4,300
9-1	W		0735	.11	18	180	30	7.2	0	42	36	4	7.5	78	0.7	1	4,300
9-9	Th		0955	0*	22*	340*	40*	7.1*	0*	76*	45*	8*	2.4*	27*	4.6*	~	150*
9-13	M		1555	0	No water to sample.												
9-21	T		1215	0	No water to sample.												
10-6	W		1400	0	No water to sample.												
10-7	Th		1715	0	No water to sample.												

* Analyses represent water from pool with no overflow.

Station 154 -- Located on unnamed tributary below point of effluent discharge from Liberty's Southwest sewage and industrial waste treatment plant, below untreated industrial waste from Quality Veneer Company and above Rocky River. Drainage Area (sq. mi.) 0.28

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-20	F		0600	.4	23	440	20	7.1	0	152	70	15	0.6	7	40	110	240,000
9-1	W		0745	.02	19	240	55	6.9	0	185	73	20	0.5	5	12	2	43,000
9-9	Th		0945	.06	24	420	120	7.1	0	186	77	14	0.4	5	19	8	240,000
9-13	M		1605	.08	22	110	15	7.2	0	247	80	25	0.2	2	34	18	2,400,000
9-21	T		1210	.11	24	100	15	7.1	0	175	68	15	1.9	22	33	25	43,000
10-6	W		1405	.06	26	~	~	7.3	0	260	73	19	0.1	1	19	8	2,400,000
10-7	Th		1705	.15	16	360	55	7.2	0	213	73	12	1.1	11	13	13	9,300,000
Average				.13	22	280	45	6.9 to 7.3	0	203	73	17	.7	8	24	26	2,100,000

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 155 - Located on Rocky River about 1.5 miles below Station 154 on unnamed tributary receiving effluent discharge from Liberty's sewage and industrial waste treatment plant and untreated industrial waste from Quality Veneer Company. Drainage Area (sq. mi.) 4.74

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5' Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-20	F	0610	0.22	22	180	35	7.2	0	52	32	7	6.6	75	0.8	1	930
9-1	W	0755	.22	18	120	20	7.3	0	46	50	5	7.5	78	0.7	1	930
9-9	Th	0935	.32	22	160	25	7.2	0	63	36	8	6.2	70	1.2	3	930
9-13	M	1620	.04	22	est. 180	15	7.4	0	73	42	16	6.9	79	1.0	1	9,300
9-21	T	1155	.12	24	100	10	7.4	0	78	37	9	6.0	71	2.2	2	2,400
10-6	W	1415	0	No water to sample.	Zero flow omitted from average.											
10-7	Th	1700	0	No water to sample.	Zero flow omitted from average.											
Average			.18	22	150	20	7.2 to 7.4	0	62	39	9	6.6	75	1.2	2	2,900

Station 156 - Located on Rocky River 4.3 miles below Station 155 also on this river and 0.4 of a mile above confluence with North Branch of Rocky River and proposed water supply for Siler City. Drainage Area (sq. mi.) 14.6

8-20	F	0645	.76	23	90	30	6.8	0	36	34	2	4.9	56	1.0	5	4,300
9-1	W	0815	.17	19	320	120	7.1	0	37	43	6	5.9	63	1.1	1	1,500
9-9	Th	1010	.11	23	340	7	6.9	0	40	24	5	4.5	52	3.0	2	230
9-13	M	1540	.11	22	180	15	7.0	0	38	53	9	6.3	72	2.9	2	430
9-21	T	1230	0	No water to sample	- zero flow excluded from average.											
10-6	W	1450	0	No water to sample	- zero flow excluded from average.											
10-7	Th	1800	0	No water to sample	- zero flow excluded from average.											
Average			.29	22	230	45	6.8 to 7.1	0	38	39	6	5.4	61	2.0	3	1,600

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 157 -- Located on Rocky Branch below point of effluent discharge from Liberty's Northeast sewage and industrial waste treatment plant and new complete treatment plant under construction during the period of sampling. Drainage Area (sq. mi.) 2.65

Date Col. 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity			Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D.		Coliform M.P.N. per 100 ml.
								Phenol. ppm	Total ppm	Phenol. ppm					ppm 20°C	lbs/day 25°C	
8-20	F	0700	—*	23*	60*	7*	7.4*	0*	150*	53*	41*	1.0*	11*	46*	—	—	2,400,000*
9-1	W	0855	.2	19	55	6	7.4	0	171	64	53	0.8	9	26	35	35	4,300,000
9-9	Th	1050	.3	23	1,440**	600**	7.0	0	53	30	24	3.1	36	13	26	26	430,000
9-13	M	1520	.2	19	90	10	7.4	0	150	64	27	1.9	20	16	22	22	43,000
9-21	T	0110	.2	23	90	20	7.3	0	120	50	12	2.6	30	23	31	31	15,000
10-6	W	1430	.2	24	74	10	7.4	0	167	77	25	1.3	15	14	19	19	240,000
10-7	Th	1725	.3	14	160	10	7.3	0	172	76	34	1.2	12	16	32	32	9,300,000
Average			.2	20	95	10	7.0 to 7.4	0	139	60	29	1.8	20	18	28	28	2,400,000

* Excluded from average as there was an unseasonable flow with an undefined rating.
** Excluded from average as high color and turbidity were probably due to construction activities at the new sewage and industrial waste treatment plant.

Station 158 -- Located on North Branch Rocky River 5.3 miles below Station 157 on this river, 1.3 miles above Rocky River and above the proposed water supply and existing water supply of Siler City. Drainage Area (sq.mi.) 12.3

Date Col. 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity			Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D.		Coliform M.P.N. per 100 ml.
								Phenol. ppm	Total ppm	Phenol. ppm					ppm 20°C	lbs/day 25°C	
8-20	F	0635	0.35	23	90	15	6.7	0	45	38	12	4.1	47	1.0	2	2	2,400
9-1	W	0835	.31	21	840	220	6.8	0	40	26	10	1.7	19	1.3	3	3	4,300
9-9	Th	1035	1	22	380	240	7.1	0	55	43	13	6.3	72	1.9	13	13	4,300
9-13	M	1500	.14	21	280	300	6.8	0	41	32	9	0.9	10	3.1	3	3	4,300
9-21	T	1240	.14	24	540	55	6.8	0	45	30	7	1.5	18	2.7	3	3	1,500
10-6	W	1440	0	No	water to sample.	Zero flow excluded from average.											
10-7	Th	1745	0	No	water to sample.	Zero flow excluded from average.											
Average			.39	22	420	170	6.7 to 7.1	0	45	34	10	2.9	33	2.0	5	5	3,400

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 158A (Old W23) - Located on Rocky River at Siler City's filter plant intake which is 3.8 miles below Station 156 on Rocky River and 4.7 miles below Station 158 on North Branch Rocky River. Drainage Area (sq. mi.)

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH		Alkalinity		Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100ml.
								Range		Phenol.				ppm	% Sat.	20°C	25°C	
1954	9-9	Th	1145		24	240	25	6.8		0		38	27	4	1.5	18	3.5	3.6
	9-21	T	1630		23	28	30	6.7		0		40	25	4	1.2	14	>8.1*	240
	10-6	W	1530		28	180	40	7.2		0		38	29	5	6.6	84	2.7	240
	10-14	Th	1400		20	210	45	6.8		0		45	38	5	4.1	45	1.9	430
Average					24	160	35	6.7 to 7.2		0		40	30	5	3.4	40	2.7	230

* Excluded from average, indeterminate.

Note: Low dissolved oxygen and high values of B.O.D. are due to sampling at raw water tap at filter plant which has a low level intake.

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 159 - Located on Rocky River 3.7 miles below Siler City's water supply dam, a few hundred feet below a private dam and 0.5 of a mile above Love's Creek receiving effluent discharge from Siler City's sewage and industrial waste treatment plant.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phencl. ppm	Alkalinity Total as CaCO ₃ ppm	Hardness ppm	Chlo-ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm	lbs/day 25° C	Coliform M.P.N. per 100 ml.
1954																
8-18	W	0625	1.5	23	440	160	6.7	0	25	20	2	5.2	60	1.2	12	930
9-16	Th	1215	.54	24	55	20	6.8	0	37	26	5	6.1	72	2.0	7	430
9-28	T	1355	.70	24	140	25	7.0	0	39	27	5	6.5	76	0.9	4	2,400
10-4	M	1640	.5	25	100	7	7.0	0	40	56	4	5.1	61	1.3	4	1,500
10-8	F	0900	.99	16	220	20	6.9	0	50	34	3	5.8	58	1.4	9	430
10-14	Th	1550	0*	23*	100*	15*	7.2*	0*	61*	60*	4*	6.6*	76*	1.2*	—*	4,300*
Average			.85	22	190	45	6.7 to 7.2	0	38	33	4	5.7	65	1.4	7	1,100

Date Col. 1954	Day	Time	Formaldehyde ppm
8-18	W	0625	0
9-16	Th	1215	0
9-28	T	1355	0
10-4	M	1640	0
10-8	F	0900	0
10-14	Th	1550	0

* Excluded from average as sample represents water in a pool with no overflow.

ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 160 - Located on Love's Creek above point of effluent discharge from Siler City's Drainage Area (sq.mi.) 7.74
sewage and industrial waste treatment plant.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100ml.
1954															
8-18	W	0540*	.80*	24*	1380*	55*	6.7*	0*	31*	38*	3*	4.6*	6.3*	34*	240,000*
9-16	Th	1135	.10	22	26	7	7.3	0	69	91	34	7.1	2.8	2	2,400
9-28	T	1300	.18	22	140	40	7.3	0	65	59	18	7.0	1.0	1	2,400
10-4	M	1600	.04	24	120	20	7.2	0	64	27	11	4.7	3.9	1	4,300
10-8	F	0845	.04	13	100	20	7.1	0	74	61	12	3.5	1.2	1	2,400
10-14	Th	1500	.06	21	44	10	7.4	0	75	83	19	5.9	1.6	1	24,000
Average			.08	20	85	20	6.7 to 7.4	0	69	64	19	5.6	2.1	1	7,100

Date Collected	Day	Time	Formaldehyde ppm
1954			
8-18	W	0540	0*
9-16	Th	1135	0
9-28	T	1300	0
10-4	M	1600	0
10-8	F	0845	0
10-14	Th	1500	0

* Excluded from average, unseasonable flow. High B.O.D. and M.P.N. possibly due to overflow of sewage from manhole on influent outfall.

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 161. - Located on Love's Creek below point of effluent discharge from Siler City's Drainage Area (sq.mi.) 8.14 sewage and industrial waste treatment plant and 0.7 of a mile above Rocky River.

Date Collected	Day Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. lbs/day	Coliform M.P.N. per 100 ml.
1954													
8-18	W 0610*	.81*	24*	680*	200*	6.8*	0*	48*	7*	3.6*	42*	30*	160*
9-16	Th 1150	.90	25	440	100	6.9	0	71	43	0.0	0	180	1100
9-28	T 1375	.92	26	580	30	7.0	0	47	55	0.0	0	380	2400
10-4	M 1615	.86	28	660	140	7.1	0	54	63	0.0	0	340	2000
10-8	F 0830	.70	16	210	50	6.8	0	68	69	0.0	0	200	950
10-14	Th 1535	.92	26	1120	270	7.1	0	59	80	0.0	0	480	3000
Average		.86	24	600	120	6.8 to 7.1	0	60	62	0.0	0	320	1900
													110,000,000

Date Collected	Day Time	Formaldehyde ppm
1954		
8-18	W 0610	0*
9-16	Th 1150	0
9-28	T 1375	0
10-4	M 1615	0
10-8	F 0830	0
10-14	Th 1535	0

* Excluded from average as flow somewhat influenced by rainfall and pollution represents in large part night flow of sewage.

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 162 - Located on Rocky River 1.5 miles below Station 161 on Love's Creek, Drainage Area (sq. mi.) 78.7

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
8-18	W	0650	2.3	25	280	30	7.2	0	59	35	10	1.5	18	16	250	930,000
9-16	Th	1235	1.4	25	90	7	7.5	0	110	57	23	5.4	64	23	220	43,000
9-28	W	1405	1.6	23	180	35	7.2	0	95	46	23	2.1	24	6.6	71	73,000
10-4	M	1700	1.4	23	130	7	7.4	0	124	54	28	0.6	7	11	100	93,000
10-8	F	0915	1.7	15	80	7	6.9	0	100	42	21	0.6	6	24	280	2,400,000
10-14	Th	1630	.9	22	120	15	7.2	0	82	46	12	2.3	26	6.3	38	43,000
Average			1.6	22	150	15	6.9 to 7.5	0	95	47	20	2.1	24	14	160	600,000

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 163 - Located on Rocky River 2.6 miles below Station No. 162 on this river. Drainage Area (sq.mi.) 93.2

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954																
8-18	W	0720	1.6	25	42	10	7.2	0	33	36	8	7.1	85	2.6	28	24,000
9-16	Th	1255	.5	25	36	10	7.1	0	56	37	14	6.5	77	1.8	6	730
9-28	T	1430	.2	24	80	55	7.2	0	65	37	17	6.2	73	1.7	2	2,400
10-4	M	1720	.2	25	44	10	7.2	0	85	42	20	2.4	29	4.0	5	2,400
10-8	F	0935	1.3	17	55	6	7.2	0	85	47	19	4.0	41	2.8	25	430
10-14	Th	1700	0*	22*	50*	6*	7.1*	0*	78*	54*	22*	4.5*	51*	1.1*	-*	2,400*
Average			.8	23	50	20	7.1 to 7.2	0	65	40	16	5.2	61	2.6	13	6,000

Date Collected	Day	Time	Formaldehyde ppm
1954			
8-18	W	0720	0
9-16	Th	1255	0
9-28	T	1430	0
10-4	M	1720	0
10-8	F	0935	0
10-14	Th	1700	0*

* Excluded from average as analyses represents water in pool with no overflow.

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 164 - Located on Rocky River 3.3 miles below Station 163 on this river. Drainage Area (sq. mi.) 124

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
1954															
8-18	W	0755	1.3	24	100	15	6.9	0	26	3	5.4	64	0.7	6	430
9-16	Th	1345	.9	26	65	15	7.4	0	37	13	7.8	95	1.8	11	730
9-28	T	1125	.3	23	160	40	7.3	0	32	15	7.7	89	2.2	4	2,400
10-4	M	1750	.2	26	55	10	7.4	0	38	10	7.3	89	0.8	1	4,300
10-8	F	0950	.4	16	100	20	7.1	0	41	11	6.7	67	1.6	4	240
10-14	Th	1800	.1	22	70	15	7.4	0	52	16	7.5	85	1.2	1	930
Average			.5	23	90	20	6.9 to 7.4	0	38	11	7.1	82	1.4	5	1,500

Station 165 - Located on Rocky River 11.4 miles below Station 164 on this river and 3.4 miles above Deep River. Drainage Area (sq. mi.) 23.7

8-18	W	0835	5.9	26	50	20	7.2	0	31	4	5.8	71	0.5	20	3,000
9-16	Th	1425	6.2	26	42	6	7.2	0	39	9	8.5	104	1.5	63	2,400
9-28	T	1100	4.7	24	90	25	7.1	0	29	20	7.1	84	0.7	22	2,400
10-4	M	1810	5.6	27	44	10	7.4	0	27	4	8.0	99	1.0	38	230
10-8	F	1030	4.3	18	60	10	7.2	0	32	5	8.5	89	0.6	17	150
Average			5.3	24	55	15	7.1 to 7.4	0	32	8	7.6	89	.9	32	1,600

TABLE 15
ANALYTICAL RESULTS
DEEP RIVER DRAINAGE AREA

Station 166 - Located on Deep River at Lockville Dam of Carolina Power and Light Company 3.2 miles above mouth. Drainage Area (sq.mi.) 1412

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	Coliform
1954																	
8-18	W	0910	303	26	60	15	7.2	0	32	35	10	6.0	73	0.8	1600	430	
8-30	M	1100	323	27	70	20	7.3	0	37	33	18	6.0	74	1.7	3700	150	
9-17	F	0940	319	26	65	20	7.2	0	42	50	18	7.5	91	1.4	3000	430	
9-23	Th	1145	320	24	90	20	7.0	0	0	43	17	6.6	78	1.0	2200	7,300	
Average			316	26	70	20	7.0 to 7.3	0	28	40	16	6.5	79	1.2	2600	2,100	

NOTE: Water has intermittent regulation during dry weather; therefore, "pounds of B.O.D." is a rate.
U. S. G. S. measured water in canal below dam as samples were taken therefrom.

Station 167 - Located on Cape Fear River at intake to Carolina Power & Light Company Cape Fear Steam Plant where water is used for domestic, steam, condenser and for fly ash disposal purposes.															Drainage Area (sq.mi.) Ind.	
8-17	T	1435	143	30	70	15	6.9	0	40	32	9.5	125	0.9	870	430	
8-30	M	0900	143	28	55	10	7.4	0	56	42	6.4	81	0.3	290	23	
9-17	F	0630	143	27	65	10	7.5	0	87	39	5.5	68	1.7	1600	4,300	
9-23	Th	1100	143	27	65	35	7.7	0	86	44	6.0	74	2.4	2300	15,000	
9-29	W	1700	143	27	49	7	7.4	0	83	31	6.4	79	1.8	1700	1,500	
Average			143	28	60	15	6.9 to 7.7	0	70	38	6.8	85	1.4	1400	4,300	

Note: Pounds of B.O.D. are not based upon river flow but upon water being pumped.

TABLE 15

ANALYTICAL RESULTS

DEEP RIVER DRAINAGE AREA

Station 168 -- Located at head of canal at Carolina Power & Light Company Cape Fear Steam Plant, which receives heated condenser water under 1954 conditions. Drainage Area (sq.mi.) Ind.

Date Col- lected 1954	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20° C	B.O.D. lbs/day 25° C	Coliform M.P.N. per 100 ml.
8-17	T	1445	143	35	70	20	8.1	0	42	17	7.8	110	2.3	2200	43
8-30	M	0845	143	35	65	25	7.6	0	57	26	6.3	89	3.3	3200	430
9-17	F	0635	143	32	65	15	7.4	0	90	32	5.4	73	1.9	1800	93
9-23	Th	1110	143	32	60	15	7.6	0	85	30	5.8	78	1.5	1400	240
9-29	W	1705	143	33	60	15	7.7	0	84	25	6.1	84	1.9	1800	730
Average			143	33	65	20	7.4 to 8.1	0	72	26	6.3	87	2.2	2100	300

Note: Pounds of B.O.D. are based on water being pumped.

Station 169 -- Located at mouth of Canal which carries heated condenser water from Carolina Power and Light Company Cape Fear Steam Plant under 1954 conditions. Drainage Area (sq. mi.)

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20° C	B.O.D. lbs/day 25° C	Coliform M.P.N. per 100 ml.
8-17	T	1510	143	36	80	20	7.9	0	41	19	7.9	113	2.0	1900	730
8-30	M	0925	143	34	70	25	7.6	0	51	23	6.4	89	1.3	1300	93
9-17	F	0650	143	30	65	10	7.5	0	94	32	5.5	72	2.7	2600	240
9-23	Th	1125	143	34	70	10	7.7	0	92	34	6.4	89	2.0	1900	430
9-29	W	1720	143	32	60	10	7.5	0	85	24	6.1	82	1.6	1500	150
Average			143	33	70	15	7.5 to 7.9	0	73	26	6.5	89	1.9	1800	330

EXPLANATION OF TABLE 16, RECOMMENDED CLASSIFICATIONS

The tentative recommended classifications of the surface waters in the River Drainage Area of the Cape Fear River Basin are given in Table 16. These recommendations are considered to represent the best usage of the streams and the best interest of the public. They are submitted to all concerned for consideration at the public hearings and to the State Stream Sanitation Committee in its determinations of the final classifications to be assigned.

* Any stream not noted in Table 16 will carry the same classification the stream to which it is tributary.

Key to Abbreviations Used in Table

Agri.	-	Agriculture	P	-	Polluted
DS	-	Domestic Sewage	PA	-	Populated Area
F	-	Farmlands	Rec.	-	Recreation
GP	-	Grossly Polluted	SP	-	Slight Pollution
HDA	-	Highly Developed Area	W	-	Woodlands
IW	-	Industrial Waste	WS	-	Water Supply
N	-	Natural	WD	-	Waste Disposal

Brief Explanation of Water Classifications

- A-I Water supply from uninhabited watersheds requiring only approved disinfection.
- A-II Water supply with approved complete treatment.
- B Bathing and recreation.
- C Fish and wildlife propagation.
- D Agriculture, including irrigation and livestock watering, drainage and industrial cooling and process water supply.
- E Navigation and disposal of sewage, industrial waste or other wastes with the provision that such disposal will not create an offensive condition.

RECOMMENDED CLASSIFICATIONS
DEEP RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
I. Deep River from source to Oakdale Cotton Mills, Inc. water supply intake.	WF&PA	NP	WS	WS	A-II	High Point & Jamestown watershed.
A. East Prong Deep River	WF	N	WS	WS	A-II	"
1. Long Branch	WF	N	WS	WS	A-II	"
B. West Prong Deep River	WF	N	WS	WS	A-II	"
1. Hiatt Branch	WF&PA	N	WS	WS	A-II	"
2. Boulding Branch	WF&PA	N	WS	WS	A-II	"
C. Unnamed Tributary below Ward Baking Company.	PA	P	WS	WS	A-II	Jamestown watershed.
D. Unnamed Tributary below Jamestown High School.	PA	P	WS	WS	A-II	"
E. Unnamed Tributary below Highland Containner Co., Inc.	PA	P	WS	WS	A-II	"
II. Deep River from Oakdale Cotton Mills, Inc. water supply intake to Cox's Dam near Cedar Falls.	WF&PA	SP-P	WD	Agri.	D	Industrial waste & domestic sewage from mills and communities along river.
A. Bull Run Creek	WF&PA	N	Agri.	Agri.	D	
B. Copper Branch	WF	N	Agri.	Agri.	D	
C. Richland Creek	WF&PA	GP	WD	Agri.	D	Effluent from High Point East side sewage plant.
1. Two Mile Branch	WF&PA	N	Agri.	Agri.	D	
D. Reddicks Creek	WF	N	Agri.	Agri.	D	

TABLE 16
RECOMMENDED CLASSIFICATIONS
DEEP RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
1. Jenny Branch	WF	N	Agri.	Agri.	D	
2. Hickory Creek to Dam at lake at Camp Douglas Long.	WF	N	Bathing	Bathing	B	Bathing at Camp Douglas Long.
3. Hickory Creek from Dam at lake at Camp Douglas Long to mouth.	W	N	Agri.	Agri.	D	
E. Muddy Creek	WF	N	Agri.	Agri.	D	
1. Taylor Branch	WF	N	Agri.	Agri.	D	
2. Bob Branch	WF	N	Agri.	Agri.	D	
F. Simmons Branch	WF	N	Ind. WS	Agri.	D	Industrial water for Commonwealth Hosiery Company, Randleman watershed.
G. Polecat Creek to Dam at Randleman's water supply reservoir.	WF	N	WS	WS	A-II	
1. Little Polecat Creek	WF	N	WS	WS	A-II	"
2. Bull Run	WF	N	Bathing	Bathing	B	Bathing at Camp Nawaka.
H. Polecat Creek from Dam at Randleman's water supply reservoir to mouth. **	WF	N	Fishing	Fishing	C	
I. Haskett Creek	WF	P	WD	Agri.	D	Raw sewage outfall from Ashboro.
1. Penwood Branch	WF	P	WD	Agri.	D	Effluent from Ashboro sewage plant.

** All tributaries to the segments of Polecat Creek, Deep River and Rocky River, which are classified C, will carry the classification D unless otherwise noted.

DEEP RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
III. Deep River from Cox's Dam near Cedar Falls to junction with Haw River.**	WF&PA	N	Fishing	Fishing	C	
A. Bush Creek	WF	N	Fishing	Fishing	C	
B. Sandy Creek to N.C. Hwy. 49A.	WF	SP	Agri.	Agri.	D	
1. Unnamed Tributary	WF	P	Agri.	Agri.	D	Effluent from Liberty's West Sewage Plant.
C. Sandy Creek from N. C. Hwy. 49A to Dam at Ramseur's water supply reservoir.	WF	N	WS	WS	A-II	Ramseur watershed and future water supply for Liberty.
1. Mt. Pleasant Creek	WF	N	WS	WS	A-II	
D. Sandy Creek from Dam at Ramseur water supply reservoir to mouth.	WF	N	Agri.	Agri.	D	
E. Reed Creek	WF	N	Agri.	Agri.	D	
F. Mill Creek	WF	N	Agri.	Agri.	D	
G. Richland Creek	WF	N	Fishing	Fishing	C	
1. Panther Creek	WF	N	Fishing	Fishing	C	
2. Bachelor Creek	WF	N	Fishing	Fishing	C	
3. Tibbs Run	WF	N	Fishing	Fishing	C	
H. Brush Creek	WF	N	Agri.	Agri.	D	
1. Blood Run Creek	WF	N	Agri.	Agri.	D	
2. Little Brush Creek	WF	N	Agri.	Agri.	D	

** All tributaries to the segments of Polecat Creek, Deep River and Rocky River, which are classified C, will carry the classification D unless otherwise noted.

TABLE 16
RECOMMENDED CLASSIFICATIONS
DEEP RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
I. Fork Creek	WF	N	Agri.	Agri.	D	
1. Meadow Creek	WF	N	Agri.	Agri.	D	
J. Bear Creek from source to Moore County line.	WF	SP	WD	Agri.	D	Industrial waste from Lucks, Inc. Cannery.
K. Bear Creek from Moore County line to Robbins' water supply intake.	WF	N	WS	WS	A-II	Robbins watershed.
1. Wolf Creek	WF	N	WS	WS	A-II	"
2. Cabin Creek to N. C. Hwy. 27	WF	P	Agri.	Agri.	D	Effluent from Candor sewage plant.
3. Cabin Creek from N. C. Hwy. 27 to mouth.	WF	N	WS	WS	A-II	Robbins watershed.
a. Cotton Creek to mouth of Lick Creek.	WF	P	Agri.	Agri.	D	Effluent from Star sewage plants.
(1) Lick Creek	WF	P	Agri.	Agri.	D	Effluent from Biscoe sewage plant.
b. Cotton Creek from mouth of Lick Creek to mouth.	WF	N	WS	WS	A-II	Robbins watershed.
c. Mill Creek	WF	N	WS	WS	A-II	"
d. Wet Creek	WF	N	WS	WS	A-II	"
(1) Sings Creek	WF	N	WS	(1) WS	A-II	"
e. Dry Creek	WF	N	WS	WS	A-II	"
(1) Horse Creek	WF	N	WS	(1) WS	A-II	"
L. Bear Creek from Robbins' water supply intake to mouth	WF	N	Agri.	Agri.	D	

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
M ₆ Falls Creek	WF	N	Agri.	Agri.	D	
N ₆ Buffalo Creek	WF	N	Agri.	Agri.	D	
1 ₆ Meadow Creek	WF	N	Agri.	Agri.	D	
O ₆ Melendons Creek	WF	SP	Agri.	Agri.	D	
1 ₆ Juniper Creek	WF	N	Agri.	Agri.	D	
a. Little Juniper Creek	WF	N	Agri.	Agri.	D	
2. Killlets Creek (Carthage reservoir and backwaters tributaries).	WF	N	WS	WS	A-II	Carthage water supply (Natural Springs).
3. Killlets Creek from Carthage water reservoir to mouth.	WF	P	WD	Agri.	D	
a. Unnamed tributary	WF	P	WD	Agri.	D	Effluent from Carthage Imhoff tank.
b. Unnamed tributary	WF	P	WD	Agri.	D	Carthage Brooklyn Street out- fall.
4 ₆ Little Creek	WF	P	Agri. & WD	Agri.	D	Carthage North outfall.
5 ₆ Richland Creek	WF	N	Agri.	Agri.	D	
P ₆ Big Governors Creek	WF	N	Agri.	Agri.	D	
1 ₆ McIntosh Creek	WF	N	Agri.	Agri.	D	
2 ₆ Crawley Creek	WF	N	Agri.	Agri.	D	
3 ₆ Little Governors Creek	WF	N	Fishing	Fishing	C	
Q ₆ Smith Creek	WF	N	Agri.	Agri.	D	
R ₆ Indian Creek	WF	N	Agri.	Agri.	D	
1 ₆ Little Indian Creek	WF	N	Agri.	Agri.	D	

TABLE 16
RECOMMENDED CLASSIFICATIONS
DEEP RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
S. Pocket Creek	WF	N	Agri.	Agri.	D	
1. Sugar Creek	WF	N	Agri.	Agri.	D	
2. Dry Fork Creek	WF	N	Agri.	Agri.	D	
3. Raccoon Creek	WF	N	Agri.	Agri.	D	
4. Little Pocket Creek	WF	N	Agri.	Agri.	D	
T. Patterson Creek	WF	N	Agri.	Agri.	D	
U. Unnamed Tributary near Gulf	WF	N	Agri.	Agri.	D	
1. Unnamed Tributary at General Creosoting Company.	WF	GP	WD	Drainage	D	Effluent from General Creosot- ing Company waste lagoon.
V. Big Buffalo Creek	WF	N	Agri.	Agri.	D	Effluent from Sanford's Spring lane sewage plant.
1. Skunk Creek	WF	N	Agri.	Agri.	D	
2. Persimmon Creek	WF	N	Agri.	Agri.	D	
W. Little Buffalo Creek	WF&PA	SP	WD	Drainage	D	Industrial waste from Sanford.
X. Rocky River to Chatham County line.	WF	N	Agri.	Agri.	D	
1. Unnamed Tributary	WF&PA	P	WD	WD	D	Effluent from Southwest sewage plant.
Y. Rocky River from Chatham County line to lower Siler City water reservoir Dam.	WF	N	WS	WS	A-II	Watershed for Siler City.
1. North Fork Rocky River to Chatham County line.	WF	P	WD	WD	D	Effluent from Northeast sewage plant.
2. North Fork Rocky River from Chatham County line to Rocky River.	WF	N	WS	WS	A-II	Watershed for Siler City

RECOMMENDED CLASSIFICATIONS

DEEP RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
3. Lacy's Creek	WF	N	WS	WS	A-II	Watershed for Siler City.
Z. Rocky River from Lower Siler City water Reservoir Dam to Deep River.**	WF	N	Fishing	Fishing	C	
1. Loves Creek	WF	GP	WD	Agri.	D	Effluent from Siler City sewage plant.
2. Meadow Creek	WF	N	Agri.	Agri.	D	
3. Tick Creek	WF	N	Agri.	Agri.	D	
4. Landrum Creek	WF	N	Agri.	Agri.	D	
5. Hollands Creek	WF	N	Agri.	Agri.	D	
6. Bear Creek	WF	N	Fishing	Fishing	C	
AA. Rocky Branch	WF	N	Agri.	Agri.	D	

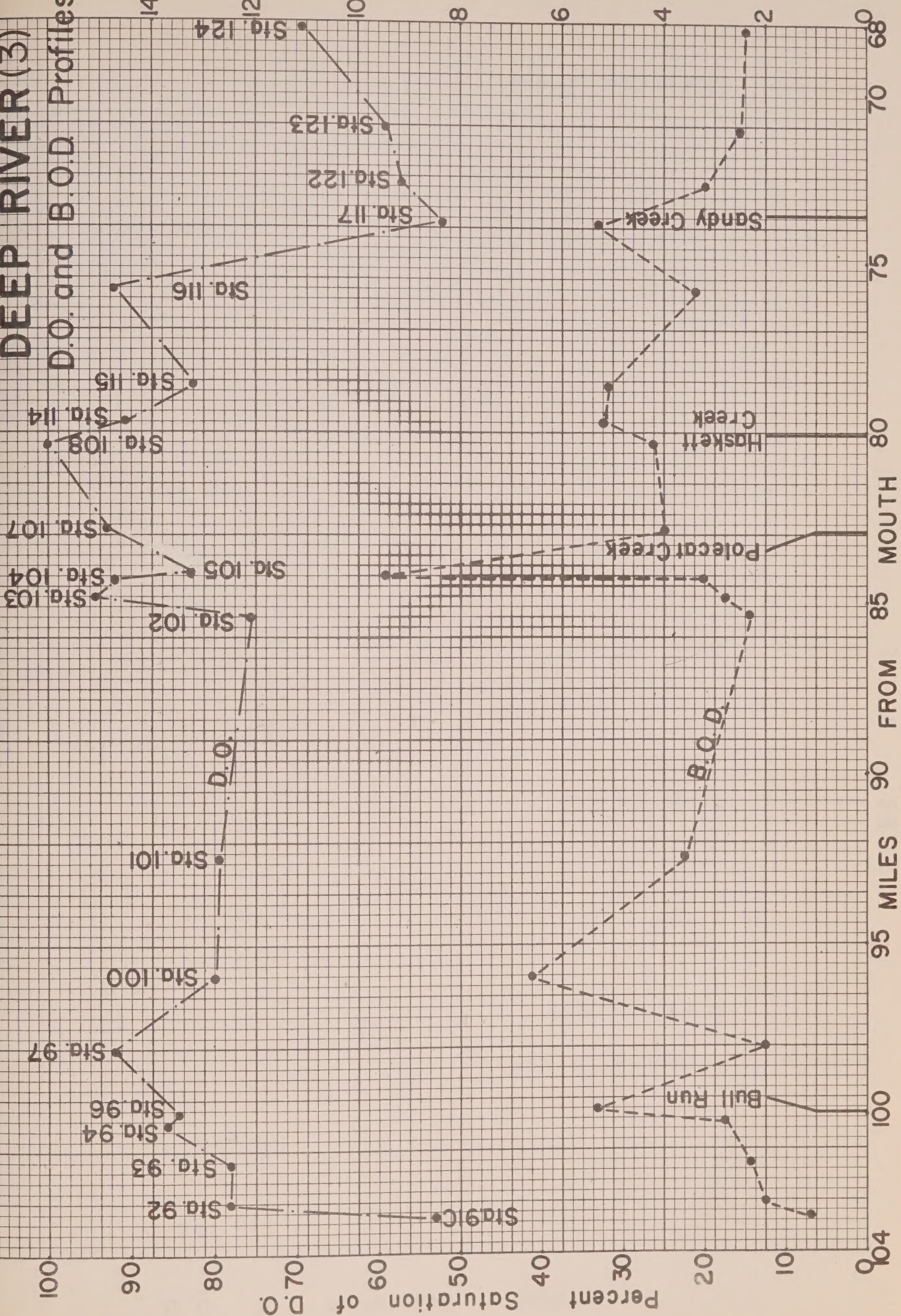
** All tributaries to the segments of Polecat Creek, Deep River and Rocky River, which are classified C, will carry the classification D unless otherwise noted.

DEEP RIVER (3)

D.O. and B.O.D. Profiles

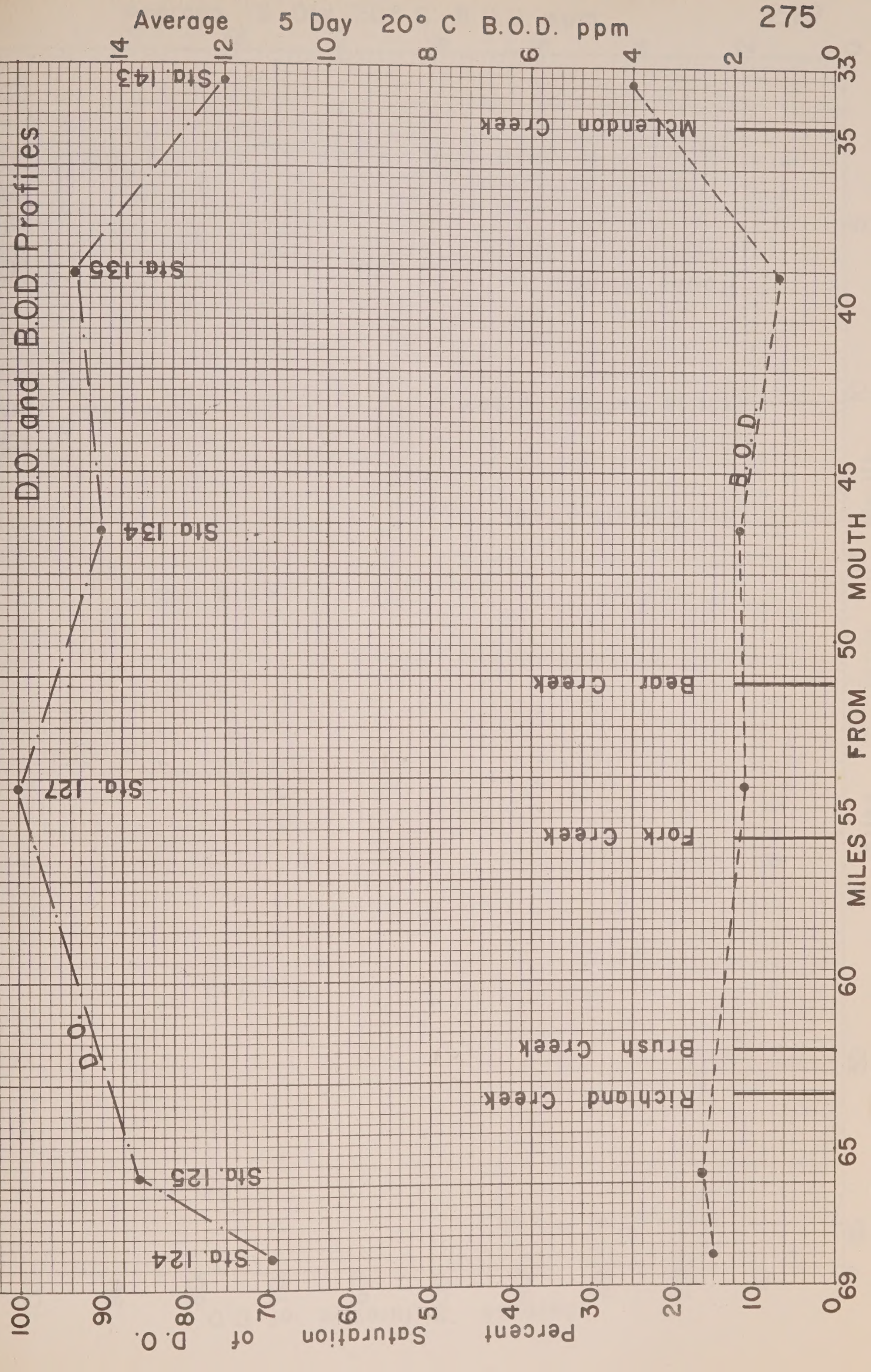
Average 5 Day 20° C B.O.D. ppm

273



DEEP RIVER (2)

D.O. and B.O.D. Profiles



DEEP RIVER (1)

D.O. and BOD Profiles

Average 5 Day 20° C B.O.D. ppm 277

Sta. 166

Sta. 149

Sta. 145

Sta. 144

Sta. 143

D.O.

B.O.D.

Rocky River

Little Buffalo Creek

Big Buffalo Creek

McLendon Creek

Mouth

From

Miles

30

35

Percent

Saturation

of D.O.

100

90

80

70

60

50

40

30

20

10

0

0

2

4

6

8

10

12

14

0

5

10

15

20

25

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20

25

ROCKY RIVER

DO and B.O.D. Profiles

Average 5 Day 20°C B.O.D. ppm

281

16

14

12

10

8

6

4

2

0

12 MOUTH

18 FROM

24 MILES

27

30

33

36

100

90

80

70

60

50

40

30

20

10

0

Percent Saturation of D.O.

Std. 165

Std. 164

Std. 163

Std. 162

Std. 159

Std. 158-A

Std. 156

Std. 155

Std. 153

Bear Creek

Tick Creek

Loves Creek

North Branch Rocky River

Unnamed Tributary

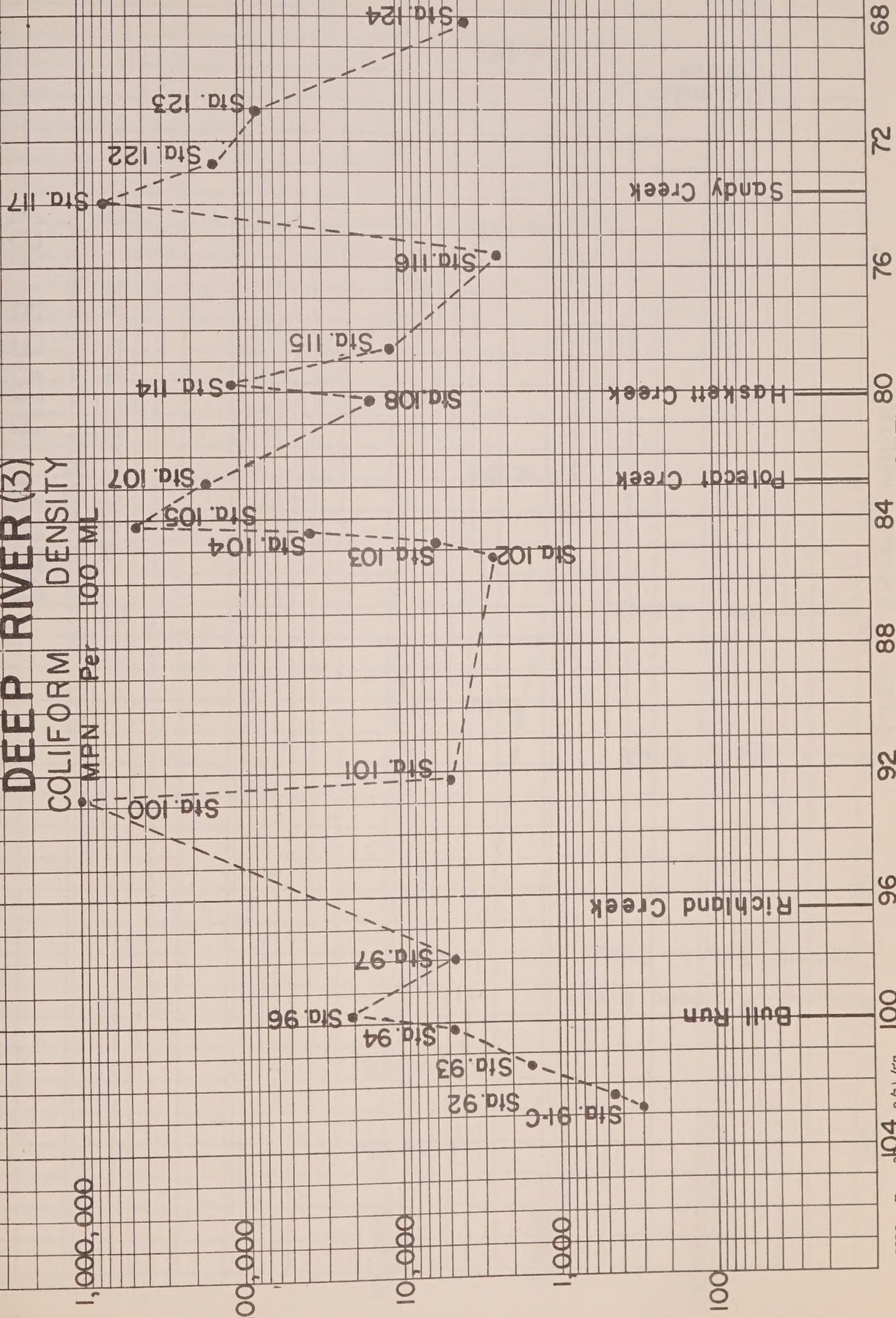
B.O.D.

D.O.

DEEP RIVER (3)

COLIFORM DENSITY

MPN Per 100 ML



DEEP RIVER (2)

COLIFORM DENSITY

MPN Per 100 ML

10,000

1,000

100

Sta. 124

Sta. 125

Richland Creek

Brush Creek

Fork Creek

Sta. 127

Bear Creek

Sta. 134

56 MILES FROM MOUTH

Sta. 135

McLendon Creek

Sta. 143

36 40 44

DEEP RIVER (I)

COLIFORM DENSITY

MPN Per 100 ML

10,000

1,000

100

Sta. 166

Sta. 149

Sta. 145

Sta. 144

Sta. 143

Rocky River

Little Buffalo Creek

Big Buffalo Creek

McLendons Creek

0

4

8

12

16

20

24

28

32

36

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44

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692

696

700

704

708

712

716

720

724

728

732

736

740

744

748

752

756

760

764

768

772

776

780

784

788

792

796

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808

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1000

1004

1008

1012

1016

1020

1024

1028

1032

1036

1040

1044

1048

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1076

1080

1084

1088

1092

1096

1100

1104

1108

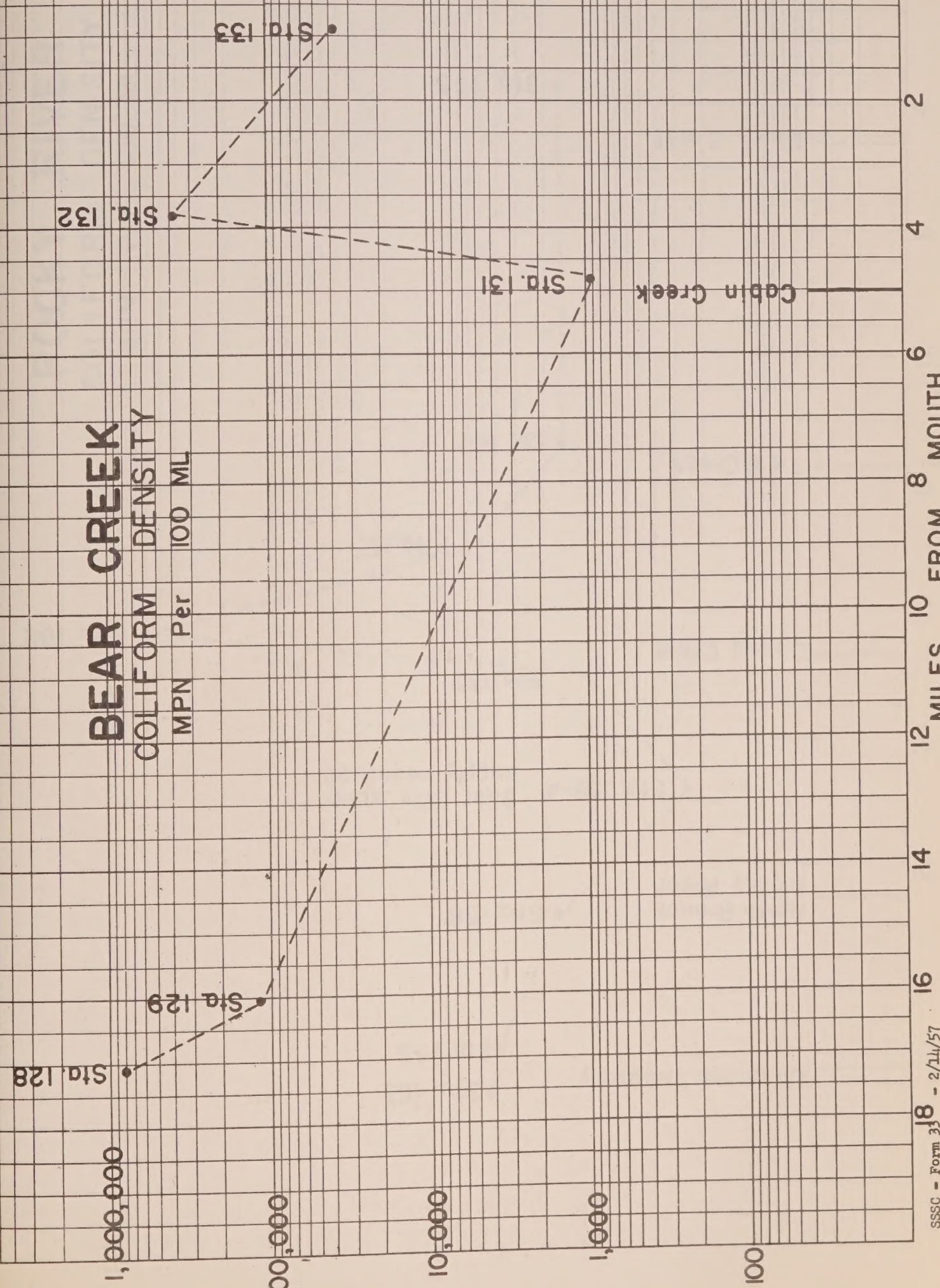
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1120

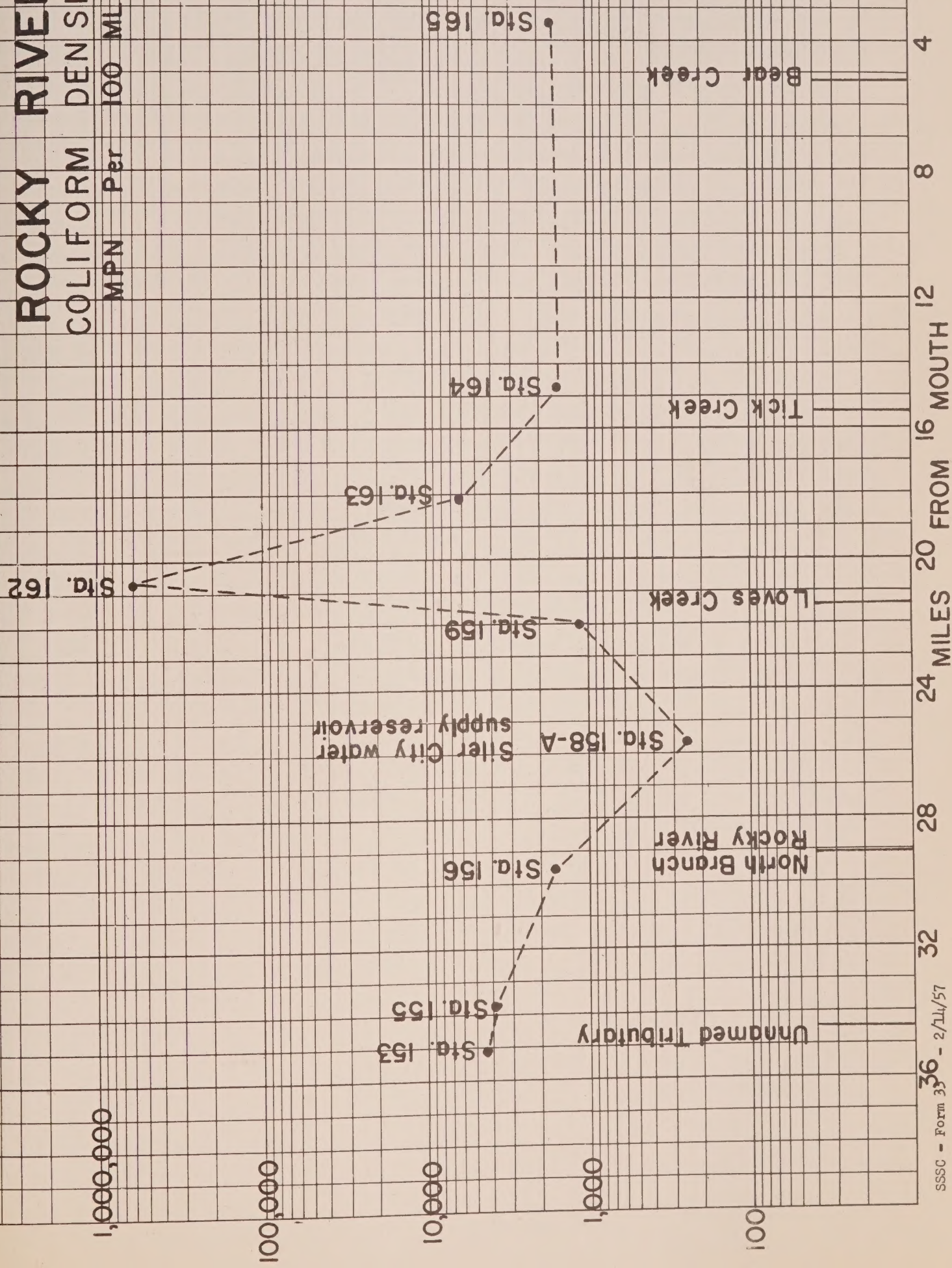
112

BEAR CREEK COLIFORM DENSITY MPN Per 100 ML



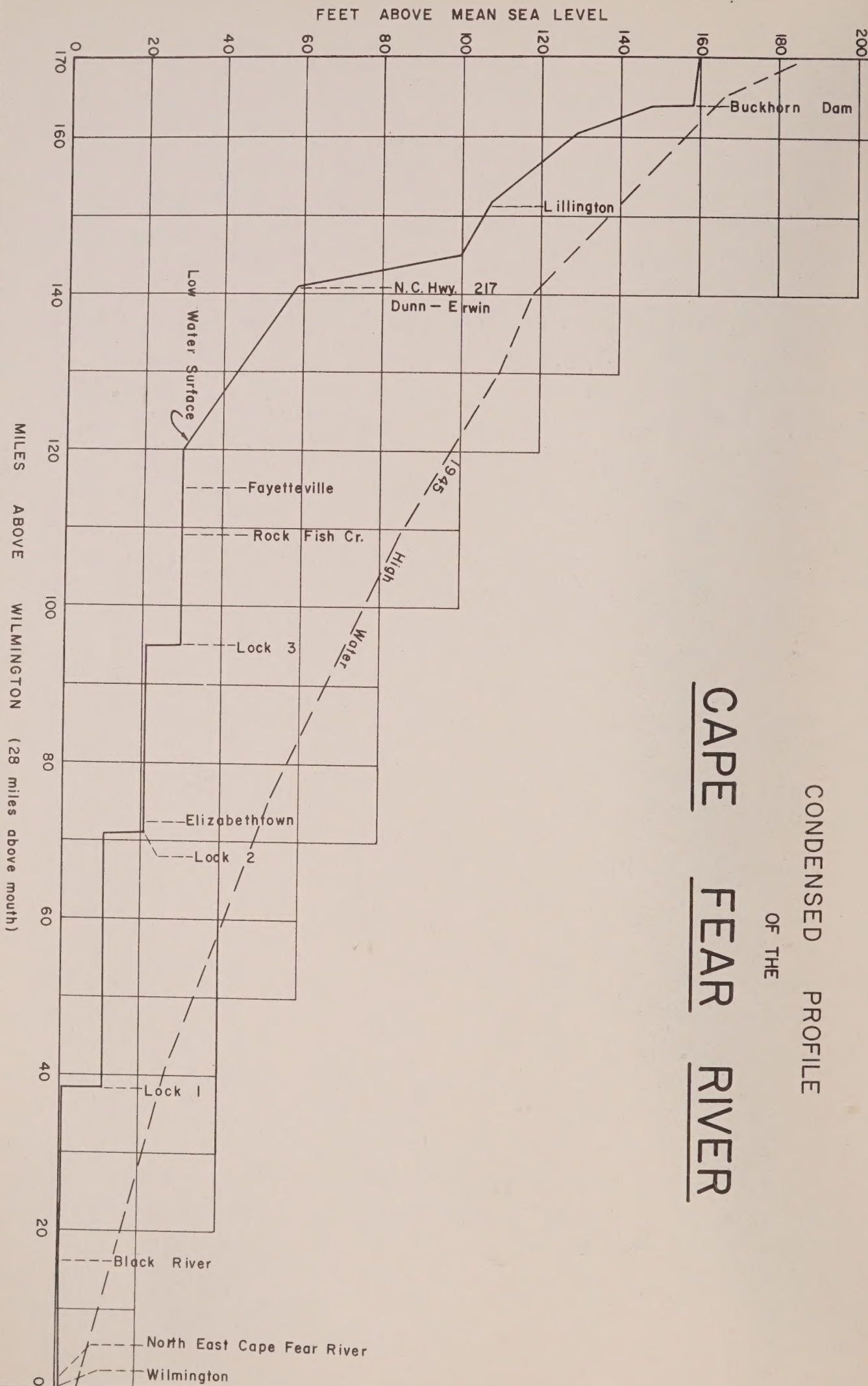
Cabin Creek

ROCKY RIVER COLIFORM DENSITY MPN Per 100 ML



CAPE FEAR RIVER

CONDENSED PROFILE
OF THE



SECTION III - MAIN RIVER DRAINAGE AREA

GENERAL DESCRIPTION

Cape Fear River is formed by the confluence of Haw and Deep Rivers in the southeastern portion of Chatham County. The river flows southeasterly to the mouth of Lower Little River, thence due south to the mouth of Rockfish Creek, thence in a southeasterly direction to Wilmington from which point it flows in a southerly direction to the Atlantic Ocean.

Cape Fear River, unlike Haw and Deep Rivers, has many major tributaries below its point of origin. Upper Little River has its beginning in central Lee County from which it flows east to Cape Fear River in the eastern part of Harnett County. This is probably the smallest of the major tributaries with a drainage area of approximately 220 square miles. The next major tributary in downstream order is Lower Little River. This stream originates in the sand hills of Moore County, flows eastwardly through Fort Bragg and enters Cape Fear River at the Harnett-Cumberland County line near Erwin. It has an approximate drainage area of 500 square miles. Rockfish Creek, which enters Cape Fear River near Fayetteville, flows southeast from Southern Pines to Raeford, then east to the main river. This stream has an approximate drainage area of 300 square miles. Black River, one of the larger tributaries, is formed by Coharie Creek and Six Run Creek and encompasses approximately 1,560 square miles of drainage area which contains a considerable amount of swamplands. The main stem of Black River is relatively short but with South River, which is formed near Dunn by Mingo Swamp and another stream called Black River (locally called "Little Black River"), it reaches almost to the upper limits of this Section. South River has an approximate drainage area of 500 square miles. The last and also the largest major tributary to Cape Fear River is Northeast Cape Fear River which originates in southern Wayne County at Mt. Olive and flows east and then south to the New Hanover County line from which point it flows westerly for approximately fifteen miles and then south to Cape Fear River at Wilmington. This river drains approximately 1,750 square miles of area, much of which is swamplands.

This Section of the Cape Fear River Basin includes the whole of five counties and portions of ten other counties. The entire Cape Fear River Basin as outlined in this report drains a total of 9,149 square miles. Of this total 3,084 square miles are included in the Haw River and Deep River Drainage Areas, leaving a total of 6,065 square miles in the Main River Drainage Area. A tabulation of the estimated areas within each of the counties lying in the Main Stem Drainage Area is as follows:

<u>County</u>	<u>Total Area</u> <u>(Sq. Miles)</u>	<u>Est. Area in Basin</u> <u>(Sq. Miles)</u>
Bladen	879	590
Brunswick	873	392
Chatham	707	43
Columbia	939	100
Cumberland	661	649
Duplin	822	822
Harnett	606	606
Hoke	414	250

<u>County</u>	<u>Total Area</u> <u>(Sq. Miles)</u>	<u>Est. Area in Basin</u> <u>(Sq. Miles)</u>
Lee	255	185
Moore	672	187
New Hanover	194	194
Onslow	756	147
Pender	857	857
Sampson	963	963
Wake	866	80
	<u>10,464</u>	<u>6,065</u>

Topography

The main stem of Cape Fear River originates at approximately the fall line and flows through one of the three physiographic regions of the State, the Coastal Plain region which includes part of the sand hills section.

The topography is somewhat different from that along Haw and Deep Rivers. The terrain is rolling in the area around Lillington, Sanford and eastward toward Dunn. As the river extends south from Fayetteville, the terrain becomes flatter with the streams becoming more sluggish. The valleys are not as deep and are wider with only the main river and the larger tributaries having high banks. The main stem of the Cape Fear is not a typical swamp water stream; although, some of the upper tributaries flow through swampy areas and swamps border the main stem in part between Lock #1 and Wilmington. The sand hills appear to be mostly sand which accumulates large quantities of water. The streams are fast moving and seem to have an apparently inexhaustible supply of water. The major part of the drainage areas of Black River and Northeast Cape Fear River is very flat with large flood plains, swamps, and pocosins. The river is 170 miles long from Wilmington to its origin at the junction of Haw and Deep Rivers and has a fall of approximately 160 feet, giving an average fall of 0.94 feet per mile of river. This fall is rather rapid down to Fayetteville where it begins to flatten out. These features can readily be observed from the condensed profile of the Cape Fear River shown on page 294.

Cover and Climate

This Section contains several well-developed and populated areas, of which Fayetteville, Fort Bragg, and Wilmington are the largest; however, Sanford, Southern Pines, Dunn-Erwin, Clinton, Carolina Beach, and Wrightsville Beach also should be mentioned. The upper portion is predominantly agriculture with the lower portion having a large coverage of woodlands and swamps. An average of 50 per cent of total land area is being used for farms. The Onslow, New Hanover, and Brunswick County beaches are well developed with summer homes and cottages.

The temperature in the area is very mild as well as consistent. There are ten stations throughout the area that report daily to the State Weather Bureau in Raleigh. These stations reported an average temperature throughout the area of 62° F. during the year of 1955, the year in which the major part of the stream study was made in this Section. The variation was very small, ranging from an average high temperature of 81.1° F. in Fayetteville during July to an average low temperature of 36.4° F. at Moncure in December.

There was an average rainfall of 53.0 inches during the year 1955. This is somewhat larger than the long term average of 47.6 inches. This increase of 5.4 inches is not the complete story of the weather encountered by the laboratory crew based at Wilmington. There was a total rainfall for the year of 92.20 inches at the station in Wilmington of which 37.05 inches of rain fell during the months of August and September. This is 15.45 inches above normal for these two months. In contrast only 7.32 inches fell during these two months in 1956, which was somewhat below normal. The heavy rains in 1955 which accompanied hurricanes Connie, Diane and Ione, fell during the height of the sampling in that year and seriously delayed this program. Hurricane Connie passed through the eastern corner of the State on August 12. The storm entered the State near Beaufort and traveled due north toward Elizabeth City. This one had only indirect effects, causing heavy rains and high tides. Hurricane Diane entered the State at 0500 on August 17 at Wilmington and passed northward toward Durham. This storm passed through the center of the basin causing very heavy rain, winds, and tides up to nine feet above normal. On September 19 Hurricane Ione entered North Carolina in the vicinity of Morehead City, moved inland, then turned and passed out to sea off the coast of Currituck County. This storm had little direct effect on the Cape Fear River Basin, except for the heavy rains and high tides that added to the already swollen streams.

The snowfall and ice formation in the area was so small that it was insignificant.

Stream Flow

There were 144 gaging stations established to obtain flows in connection with the sampling program on the main stem of the Cape Fear River and its tributaries. Of these, nine were permanent active gaging stations maintained and operated by the United States Geological Survey. These stations are located as follows: (1) Cape Fear River at Lillington, N. C.; (2) (Lower) Little River at Linden, N. C.; (3) Rockfish Creek near Hope Mills, N. C.; (4) Cape Fear River at Lock 3 near Tarheel, N. C.; (5) Little Coharie Creek near Roseboro, N. C.; (6) Black River near Tomahawk, N. C.; (7) South River near Parkersburg, N. C.; (8) Colly Creek near Kelly, N. C.; and (9) Northeast Cape Fear River near Chinquapin, N. C.

Flow data for each of these stations are available through the District Office of the U. S. Geological Survey, Raleigh, N. C. Maximum, average, and minimum flows, the exact location, and records available for each of the above mentioned stations are listed below:

Cape Fear River at Lillington, N. C.

Water stage recorder. Datum of gage is 105.71 above sea level. Located at lat. 35° 24', long. 78° 49'. Located near right bank in downstream end of pier of bridge on U. S. Highway 15A, 1,800 ft. downstream from Norfolk Southern Railroad bridge, 0.5 mile north of Lillington, Harnett County and one mile downstream from Neill Creek. Drainage Area 3,440 sq. miles. Records available Dec. 1923 - Sept. 1955. Minimum discharge 11 cfs, October 14, 1954, average for 31-year period 3,292 cfs. Maximum discharge September 19, 1945, uncertain. Records fair except for those of no gage height record, which are poor. Large diurnal fluctuation and considerable regulation caused by power plants upstream.

(Lower) Little River at Linden, N. C.

Water stage recorder. Datum of gage is 73.10 ft. above mean sea level. Located at lat. $35^{\circ} 16'$, long. $78^{\circ} 47'$ on left bank 10 ft. downstream from bridge on U. S. Highway 15A 16 miles west of Linden, Cumberland County, two miles upstream from Stewart Creek and $4\frac{1}{2}$ miles from mouth. Drainage area 460 sq. miles. Records available November 1928 to September 1955. Minimum discharge 26 cfs, October 14, 1940. Average discharge for 26-year period 535 cfs. Maximum discharge, September 18, 1945, 13,500 cfs occurred during period of backwater from Cape Fear River. Records good, except for period of backwater of Cape Fear River, which are fair.

Rockfish Creek near Hope Mills, N. C.

Water stage recorder. Datum of gage is 52.25 ft. above sea level. Located lat. $34^{\circ} 58'$, long. $78^{\circ} 55'$ on left bank 150 ft. upstream from U. S. Highway 301 at mouth of Little Rockfish Creek, $1\frac{3}{4}$ miles east of Town of Hope Mills, Cumberland County, and $5\frac{3}{4}$ miles upstream from mouth. Records include flow from Little Rockfish Creek. Drainage area, 284 sq. miles including Little Rockfish Creek. Records available October 1902 to May 1903 gage heights only, November 1928 to December 1931, February 1939 to December 1954. Gage reestablished during summer of 1955 for Stream Sanitation Study, records not published. Minimum discharge 2.6 cfs, October 24, November 22, 23, 1941. Average discharge 17-year period 377 cfs. Maximum discharge 8,000 cfs, September 18, 1945. Records fair except for periods of doubtful gage height records, which are poor. Large diurnal fluctuation and considerable regulation caused by mills and reservoirs above station.

Cape Fear River at Lock 3, near Tarheel, N. C.

Water stage recorder. Datum of gage is 28.935 ft. above mean sea level. Located at lat. $34^{\circ} 50'$, long. $78^{\circ} 48'$ on right bank 100 ft. upstream from lock 3, 1 mile downstream from county line, 7 miles north of Tarheel, Bladen County, 9 miles upstream from Phillips Creek and at mile 95. Drainage area approximately 4,810 sq. miles. Records available October 1937 to September 1955. Minimum discharge 170 cfs, September 20, 1954. Average discharge 4,763 cfs for 18-year period. Maximum discharge September 22, 1945, not determined. Records good except those computed using submergence as a factor and those for periods of no gage height record at auxiliary gage, which are fair. Slight diurnal fluctuation and some regulation for short periods at low flow caused by power plants above station.

Little Coharie Creek near Roseboro, N. C.

Water stage recorder. Datum of gage is 81 ft. Located at lat. $34^{\circ} 57'$ on downstream end of center pier of bridge on State Highway 24, $1\frac{1}{4}$ miles east of Roseboro, Sampson County, and $1\frac{1}{2}$ miles upstream from Bearskin Swamp. Drainage area 96.4 sq. miles. Records available January 1950 to September 1955. Minimum discharge 0.1 cfs, September 13, 14, 27, October 1-11, 1954. Average discharge for 5-year period 78.1 cfs. Maximum discharge 1800 cfs, September 6, 1955. Records fair except those for period of no gage height record, which are poor.

Black River near Tomahawk, N. C.

Wire-weight gage read twice daily. Datum of gage is 0.39 ft. above mean sea level. Located at lat. $34^{\circ} 45'$, long. $78^{\circ} 17'$ on downstream side of

highway bridge near center of span, a quarter of a mile downstream from Clear Run Swamp and 3 3/4 miles northeast of Tomahawk, Sampson County. Drainage area 680 sq. miles. Records available October 1951 to September 1955. Minimum discharge 8.9 cfs, October 13, 1954. Mean discharge for year 1954 - 359 cfs. Maximum discharge 6,400 cfs, September 9, 1954. Records fair, except those of no gage height record, which are poor.

South River near Parkersburg, N. C.

Wire-weight gage read twice daily. Datum of gage is 0.38 ft. above sea level. Located at lat. 34° 48', long. 78° 27' on downstream side of highway bridge near center of span at Bladen - Sampson County line, 1.9 miles southwest of Parkersburg, Sampson County. Drainage area 382 sq. miles. Records available October 1951 to September 1955. Minimum discharge .1 cfs, October 3-6, 11-14, 1954. Mean discharge for year 1954, 248 cfs. Maximum discharge 4,820 cfs, August 24, 1955. Records fair.

Colly Creek near Kelly, N. C.

Water stage recorder. Datum of gage is 15.4 ft. above mean sea level. Located at lat. 34° 28', long. 78° 15' on right bank 10 ft. downstream from bridge on State Highway #53, 4 miles east of Kelly, Bladen County, and 6 3/4 miles upstream from mouth. Records available January 1950 to September 1955. Minimum discharge 0 flow several times during year. Average discharge for 5-year period 69.1 cfs. Maximum discharge 904 cfs, September 22, 1954. Records fair except those below 2 cfs and those periods of no gage height records, which are poor.

Northeast Cape Fear River near Chinquapin, N. C.

Water stage recorder. Datum of gage is 17.28 ft. above mean sea level. Located at lat. 34° 49', long. 77° 50' on right bank 540 ft. downstream from bridge on State Highway #41, half a mile downstream from Muddy Creek and 1 1/4 miles west of Chinquapin, Duplin County. Drainage area 600 sq. miles. Records available July 1940 to September 1955. Minimum discharge 5.3 cfs, October 10 and 11, 1954. Average discharge for 15-year period 614 cfs. Maximum discharge 14,600 cfs, September 22, 1955. Records fair.

ECONOMIC DEVELOPMENT

Population

Based on the 1950 census, the estimated population of the Main River Drainage Area was 392,000. This represents a gain in the ten-year period of approximately 72,000 over the 1940 estimated population of 320,000 or 23 per cent, which greatly exceeds the 13.7 per cent increase for the State as a whole. This increase appears to be in the urban areas with increases in farm sizes in several rural counties. While there are no large cities such as in Haw River Drainage Area, three areas, Fayetteville, Fort Bragg-Spring Lake, and Wilmington, have a population of some 125,000 which is 32 per cent of the total population of the Drainage Area. Wrightsville, Kure and Carolina Beaches have a summer population of 39,000 which is 10 per cent of the total population. The remaining population is found in medium-size towns, smaller towns, villages and rural areas.

The major occupation of this area is agriculture, with tobacco being the predominant money crop. There are, however, sufficient other crops and industries to forestall a major migration of workers in case the tobacco crop fails. The industry is confined to the populated areas. For instance, Fayetteville and vicinity has a concentration of textiles, Wilmington is the center of much water-borne traffic for the State, and Southport and vicinity is important for its fishing industry. The beach areas attract many people to this Section during the summer months.

The results of an economic survey in 1955 indicated that the total per capita income for the area was \$853. This is somewhat smaller than that of Haw and Deep River Drainage Areas because of the greater agriculture population. The total farm income for the same year was \$144,126,000. Using an estimated population of 320,000, this gives an approximate farm income of \$450 per capita on an area basis. The total effective buying power for the year 1955 amounted to \$511,881,000. Although many of the counties are only partially within the drainage area, the above figures are totals for all counties except Chatham, Onslow, and Wake which have such small populations in the area as to justify their omission.

Electric Power

The public power in the Main River Drainage Area is supplied largely by Carolina Power and Light Company. This Company operates two large steam plants on the river and one hydroelectric power plant. In addition to this there are three privately-owned power plants on Rockfish Creek. Other than these larger power plants, there are probably many small mills that operate on water power or generate part of their electricity. Below is a list of the larger plants and their type, owner and KWH capacity.

<u>Name</u>	<u>Type</u>	<u>Owner</u>	<u>KWH Capacity</u>
Cape Fear Steam Plant	Steam	CP & L Co.	239,000
Sutton Steam Plant	Steam	CP & L Co.	211,000
Buckhorn	Hydro.	CP & L Co.	260
Raeford Power & Mfg. Co.	Hydro.	Raeford Power & Mfg. Co.	410
Rockfish Mebane Yarn Mills, Inc.	Hydro.	Rockfish Mebane Yarn Mills, Inc.	400
Brower Mills	Hydro.	Brower Mills	450

Forest Resources

This portion of the Cape Fear River Basin is one of the most heavily wooded areas in the State. Some 65% of the total land area is in forests. Practically all of the land is capable of producing commercial quality trees, except several thousand acres of swampland or pocosin that are too wet and unfertile to grow timber of usable size. Some of the larger pulp and paper companies have holdings here that are being developed for their own use. Many saw mills are in the area that supply lumber to the construction industry. A tabulation of some of the forest uses, as published in "Forest Statistics for the Southern Coastal Plain of North Carolina, 1952", Forest Survey Release No. 41, is listed below. The figures are totals for all counties listed.

<u>County*</u>	<u>Total Forest land (acres)</u>	<u>Public Forest land (acres)</u>	<u>Pulpwood Pro- duction 1955 Standard Cords</u>	<u>Saw Timber in Million Board Feet</u>
Bladen	421,500	31,800	47,760	940.4
Brunswick	459,900	13,500	54,272	775.0
Columbus	432,600	2,700	76,353	1,077.0
Durham	264,000	29,300	15,442	368.8
Fayette	332,000	8,000	26,944	846.3
Gaston	221,900	0	12,487	460.4
Hoke	162,600	81,300	2,226	256.6
Lee	121,700	750	13,108	189.7
Moore	323,700	1,300	13,093	621.5
New Hanover	76,300	1,000	9,529	92.8
Pender	458,800	50,800	35,970	821.4
Wilmington	381,500	100	33,734	733.6
	3,656,500	220,550	340,918	7,183.5

Agriculture

The soils of the upper portion of the Main River Drainage Area are generally well suited for agricultural uses but in the lower portion the soils become too sandy and sometimes too wet for general agricultural use. It is to be noted, however, that in recent years many of the swamplands and pocosins have been drained by canals and are being reclaimed for farm use. In addition much of the land not suitable for cultivation is now being used to raise livestock. In some of the upstream counties there is a definite trend toward using surface water for irrigation. The crops are more diversified in this Section than any other section and in comparison to the Deep and Haw River Drainage Areas, where the average size farm has been reduced from the previous census in nearly all counties, the average size farm in the Main River Drainage Area increased in over half of the counties. The importance of agriculture to this Section is emphasized when it is noted that many of the sparsely populated counties derive most or all of their income from farming. The tabulation below was obtained from the 1954 census of agriculture by the U. S. Department of Commerce. The figures are representative of the entire county.

<u>County*</u>	<u>No. of Farms</u>	<u>Acres Harvested</u>	<u>Land Under Irrigation (Acres)</u>	<u>Cash Value of 11 Principal Crops 1955</u>
Bladen	3633	70,542	143	\$ 11,165,080
Brunswick	1976	29,945	80	4,773,070

<u>County*</u>	<u>No. of Farms</u>	<u>Acres Harvested</u>	<u>Land Under Irrigation (Acres)</u>	<u>Cash Value 11 Princip Crops 1955</u>
Columbus	6051	108,880	108	\$ 24,996,5
Cumberland	3002	82,460	694	9,031,20
Duplin	5650	124,991	347	20,628,4
Harnett	4684	102,056	1,055	20,427,60
Hoke	1560	51,524	75	5,353,0
Lee	1500	24,040	416	4,979,3
Moore	2328	41,069	309	5,543,6
New Hanover	376	7,031	758	387,9
Pender	2266	41,715	233	5,090,0
Sampson	6822	170,128	582	23,701,1
	39,848	854,381	4,800	136,077,26

Dairy, Livestock and Poultry

This Section, being one of the most important agricultural areas of the State, has also contributed much to the livestock industry. Some of the swamplands that cannot be reclaimed for farms are used for cattle grazing where there is plenty of clean, salt-free water available. Much of the land not suitable for dairy or beef cattle has been used to raise poultry. The following data was taken from the 1954 census of agriculture by the U. S. Department of Commerce. The figures are representative of the entire county.

<u>County*</u>	<u>Cattle and Calves Sold Alive</u>	<u>Chickens Sold</u>	<u>Hogs and Pigs Sold Alive</u>
Bladen	2,317	42,056	19,631
Brunswick	1,064	10,843	11,346
Columbus	2,642	133,044	24,085
Cumberland	2,079	95,002	13,184
Duplin	3,549	63,978	38,226
Harnett	1,697	147,308	10,939
Hoke	601	235,919	2,603
Lee	1,033	271,134	1,696
Moore	1,256	4,142,058	3,833
New Hanover	396	5,411	3,009
Pender	1,844	26,940	18,090
Sampson	3,293	39,118	32,789
	21,771	5,212,811	179,431

*Because less than 10% of the areas are within the Section, Chatham, Onslow and Wake Counties were excluded.

Mineral Resources

The mineral resources in this area are very poor with none being mined commercially. The soils for the entire area are a mixture of sand, clay and marl. Much of the soil in the lower portion of the Section is unconsolidated.

Fish and Wildlife

Sport fishing is good in most of the larger streams in all of the counties. Some of the smaller streams in the upper portion of this Section support fish

fe, but most of the fish are found in the deeper and slower moving streams near the coast. Cape Fear River contains some waters set aside for commercial fishing which will be discussed in another section of this report. The most general types of sport fish caught are: bass, bream, pike, robbin, perch, and catfish. A hatchery near Fayetteville supplies 250,000 fish per year to stock ponds and streams in this area.

There are no game reserves in the area but there are many types of both small and large game available for hunting parties. The heavily wooded and sparsely populated areas present wonderful havens for all kinds of fish and wildlife.

Commercial Fishing and Shell Fishing

The following portions of the Main River Drainage Area have been designated by the Department of Conservation and Development as Commercial Fishing Waters:

- (1) Cape Fear River Below Kings Bluff Locks (Lock #1)
- (2) Northeast Cape Fear River below State Highway No. 53 (near Burgaw)
- (3) Brunswick River
- (4) Myrtle Sound
- (5) Middle Sound
- (6) Masonboro Sound

Certain sections of the Cape Fear River Basin are suitable for shell fishing. The salinity of the water in the vicinity of the Intracoastal Waterway and the mouth of the river is sufficient for growing oysters and other shell fish; however, in certain areas pollution is sufficient to make the shell fish unsafe for human consumption. The locations mentioned below have been declared Restricted Areas by the Division of Sanitary Engineering of the State Board of Health for the taking of oysters or clams for marketing purposes.

King Creek - Stump Sound Area: Inside of a line beginning at a point on the mainland and running due south 100 yards to reflector buoy No. 43 in the Intracoastal Waterway, thence along southside of Intracoastal Waterway Channel 200 yards to Flashing Light Channel Marker No. 39, thence due north 200 yards to a point on the mainland, then along the shore line to the point of beginning to include all of Kings Creek.

Wrightsville Area: In any waters within a line beginning at a point of beach on the northeast shore of Masonboro Inlet extending in a northeasterly direction along the shore of the Atlantic Ocean to a point on the shore 1100 yards beyond the northeast shore of Moore Inlet, thence due northwest through Channel Marker #124 of the Intracoastal Waterway to a point on the mainland; thence in a southwesterly direction along the mainland to a point on Money Point; thence due southeast through the Intracoastal Waterway Channel Marker #128 to the point of beginning to include: a slough known as Moore Creek, Stokeley Cut, Bowen Cut, Banks Channel, Wrightsville Cut, Shin Creek, Bradley Creek to its beginning, that portion of the Intracoastal Waterway between Channel Markers #124 and #128, and all tidal creeks on the northwest side of the Intracoastal Waterway between these markers.

Myrtle Sound Area: Within a line beginning at Pickett Rock and running southeast to the Intracoastal Waterway channel marker No. 153; thence running south, southwest to the south side of Carolina Beach Inlet; thence in a southerly

direction along the shore line through the Carolina Beach Boat Basin; thence in a northerly direction along the shore line to the south bank of Snows Cut; thence along the south bank of Snows Cut to the Cape Fear River; thence in a straight line to the north bank of Snows Cut; thence along the shore line in an easterly direction to Myrtle Sound; thence in a northerly direction along the shore line to the point of beginning.

Lower Cape Fear River Area - Area 12: Inside a line beginning in the Cape Fear River at the mouth of Snows Cut and running in a southerly direction along the shore line to the Basin breakwater; thence along the breakwater to its southwestern end; thence in a southwesterly direction along the eastern side of Muddy Slough to a point on the southern side of Cedar Creek; thence in a southwesterly direction across the mouth of Cape Creek to a point on the southwestern side of the mouth of Baldhead Creek; thence across the mouth of Cape Fear River to the ~~eastern~~ end of Oak Island; thence in a northwesterly direction along the Atlantic Ocean to a point on the beach; thence due north through the Intracoastal Waterway channel marker F. L. R. "22" to the mainland; thence along the shore line in an easterly direction to the eastern side of boat basin at Southport; thence in a northerly direction to Anderson's Landing, thence in a straight line across Cape Fear River to the point of beginning, to include Muddy Slough, Elizabeth River, Molasses Creek, Governors Creek, Denis Creek, Beaverdam Creek, Dutchman Creek, Price Creek, Walden Creek, and Snows Marsh.

Lower Cape Fear Area - Area 13: Inside a line beginning at the northern end of the breakwater at the Basin and running in a southerly direction along the breakwater to its southwestern end and continuing in a southwesterly direction along the eastern side of Muddy Slough to a point on the southern side of Cedar Creek; thence in a southwesterly direction across the mouth of Cape Creek to a point on the southwestern side of the mouth of Baldhead Creek; thence along the shore line of Smiths Island to Buzzard Bay Inlet; thence in a northerly direction along the Atlantic Ocean shore to the northern side of Corncake Inlet; thence in a northeasterly direction along the Atlantic Ocean shore to the northern side of the new Inlet; thence along the shore line of the Basin to the point of beginning; to include the Basin, Zekes Island, Still Creek, Cedar Creek, Cape Creek, Bay Creek, Baldhead Creek, Deep Creek, Fishing Creek and Buzzard Bay.

The regulation concerning Lower Cape Fear Area - Area 13 may be rescinded for short periods by the Commissioner of Commercial Fisheries after bacteriological studies made by the State Board of Health show the waters of the described area to be free from dangerous pollution.

Quality of Water in Commercial Fishing and Shellfishing Areas

In order to consider the question of water quality in true perspective in the areas listed above, it is necessary not only to study the effects of pollution from sewage and industrial waste but to study the effects of the character of the streams as well. It has been noted previously that, while the main stem of Cape Fear River is not a typical swamp water stream, some of the upper tributaries flow through swampy areas and swamps border the main stem in part between Lock #1 and Wilmington. On the other hand, the major part of the drainage area of Black River and Northeast Cape Fear River is flat with large flood plains, swamps, and pocosins. These conditions affect seriously the water of Cape Fear River below Lock #1 during high flows. The flushing of organic matter from

amps during heavy rains increases color and reduces the available dissolved oxygen and pH. The high flows may increase the numbers of coliform bacteria above normal values at points some distance below sources of pollution and, in some instances, result in an increase of such bacteria because of excessive surface drainage. The death rate of bacteria in water depends upon environmental factors and time. Since the bacteria due to upstream pollution are moved more swiftly downstream during flood flows, higher numbers are found at many downstream points at such times in spite of large quantities of dilution water. Conditions experienced in 1955 and 1956 are summarized as follows:

Commercial Fishing Waters

Cape Fear River below Kings Bluff Locks (Lock #1) - The analytical data collected during high flow periods in 1955 and 1956 showed that the dissolved oxygen and pH below sources of pollution were markedly reduced below those values normally experienced, while the coliform bacteria content and the color increased.

In view of the effects of swamp water streams upon the main stem of Cape Fear River, it is logical that this important fishing stream be designated as a swamp water stream from Lock #1 to the Atlantic Ocean. Such a designation requires that the water contain a minimum of 3.0 ppm of dissolved oxygen. Since this value is not met at many downstream points under prevailing conditions, it is obvious that the polluters must take appropriate action if this important fishery is to be preserved.

Northeast Cape Fear River below State Highway No. 53 - The condition of the water in this segment below sources of pollution is similar to that found in the Cape Fear River below Lock #1. In view of the many swamp water tributaries and swamps drained by the main stem of this river, it appears logical to assume swamp water designation for the whole of its length. Since the water in this segment below sources of pollution contains less than 3.0 ppm of dissolved oxygen at times, appropriate action by polluters is necessary.

Brunswick River - Conditions in this river are also similar to those prevailing in Cape Fear River below Lock #1. Here again, it is logical to assume swamp water designation for this stream. While there appears to be only incidental pollution in this segment, it is adversely affected by upstream pollution and under certain tidal conditions by downstream pollution. Appropriate action by polluters is necessary.

Myrtle Sound, Middle Sound, and Masonboro Sound - Satisfactory conditions prevail in these fishing waters.

Shellfishing Waters

It has been noted previously that the waters in the vicinity of the Intracoastal Waterway have a salinity suitable for promoting the growth of oysters and other shellfish as well as the waters at the mouth of Cape Fear River. Relative to that segment of the Intracoastal Waterway between the mouth of Turkey Creek, near the eastern limits of the Cape Fear River Basin, and the mouth of Pines Cut at the river, some of the waters are polluted by the partially treated sewage from Hollyridge and Wrightsville Beach and by surface drainage. The condition of the water is influenced by rainfall, winds and tides. In this connection, all samples in this segment were collected during a period of heavy rainfall. The segment between Turkey Creek and New Topsail Inlet is partially landlocked as there are no ocean inlets. Here salinities are reduced to as little

as 400 ppm chloride, while color and coliform bacteria are increased by upland surface drainage occurring during the periods of heavy rainfall. From New Topsail Inlet to the vicinity of Carolina Beach Inlet, the conditions are affected by winds, tides, and the inflow of ocean water, while the remaining portion is also affected by inflow of polluted water from Cape Fear River. The shellfish waters at the mouth of the river are affected by local and upstream pollution by tides and winds.

The State Board of Health has restricted the taking of shellfish from certain of these waters for human consumption, as noted previously, due to pollution from sewage. The findings are based upon sanitary surveys of tributary areas and on the bacteriological condition of the shellfish growing waters. In this connection, shellfish taken from waters with a median coliform bacteria content of 70 per 100 ml. are considered to be unsafe for human consumption. The conditions existing in the several areas during the stream studies were as follows:

King Creek - Stump Sound Area (Restricted Area) - These waters receive pollution from the partially treated sewage from the Town of Hollyridge. The median coliform bacteria content was 4,300 per 100 ml.

Stump Sound Area, Exclusive of King Creek (Open Area) - The samples, collected at three points in the Intracoastal Waterway in these landlocked waters had a median coliform bacteria content ranging from 230 to 1,500 per 100 ml. The nearest source of pollution, other than boats, is King Creek.

Topsail Sound Area (Open Area) - The samples, collected at one point in Intracoastal Waterway in these landlocked waters, had a median coliform content of 150 per 100 ml.

Middle Sound Area (Open Area) - The samples, collected at four points in Intracoastal Waterway where there is a large inflow of ocean water, had a median coliform bacteria content ranging from 23 to 430 per 100 ml. There is also a considerable inflow of upland surface drainage into this area during periods of heavy rainfall.

Wrightsville Area (Restricted Area) - Ocean water enters this area by means of Moore and Masonboro Inlets. Easterly winds on flooding tides tend to drive the partially treated sewage inland that is discharged into the water near Moore Inlet from the sewage treatment plant of Wrightsville Beach. The Intracoastal Waterway receives pollution from this source, the community of Wrightsville, and boats anchored in the area, while Wrightsville Sound receives pollution from boats anchored at the old bridge and under certain tidal conditions, it undoubtedly receives partially treated sewage from the aforementioned sewage treatment plant. Samples of water collected in this area at nine different points had a median coliform bacteria content ranging from 93 to 17,000 per 100 ml.

Masonboro Sound (Open Area) - This sound receives a large inflow of water from the ocean and is subject to inflow of upland surface drainage via Hewlett Creek. Samples were collected from the Intracoastal Waterway at one point. The median coliform bacteria content was 240 per 100 ml.

Myrtle Sound Area (Open Area) - This is a partially landlocked area which nevertheless, receives large quantities of water from the ocean. It receives upland surface drainage via Purviance and Everett Creeks. Samples collected from the Intracoastal Waterway at three points had a median coliform bacteria content ranging from 43 to 240 per 100 ml.

Myrtle Sound Area (Restricted Area) - This area receives ocean water through Carolina Beach Inlet and polluted water from Cape Fear River via Snow Cut. Samples collected from three points in the Intracoastal Waterway had a coliform bacteria content ranging from 240 to 300 per 100 ml.

Lower Cape Fear River Area - Area 12 (Restricted Area) - This area at the lower end normally has a salt content equal to that of the ocean but under conditions of heavy runoff the salinity and dissolved oxygen are greatly reduced, while the color and numbers of bacteria are increased. These conditions readily show the effects of heavy upstream pollution and swamp water. Samples of water are collected from the area at 6 different points. The median coliform bacteria content of the water ranged from 680 to 3,400 per 100 ml. during the wet summer of 1955 and from 430 to 2,300 per 100 ml. during the more normal summer of 1956.

Lower Cape Fear River Area - Area 13 (Restricted Area; open under favorable conditions) - This area adjoins part of Area 12 on the east side. While no samples were collected in this area as a part of the stream study program, samples are collected by the State Board of Health under the heavy runoff conditions of 1955. As a result of the findings by the Board, the area was closed at that time.

Parks and Recreation

The Main River Drainage Area is richly endowed with waters which lend themselves to recreational activities, both to sportsmen and to those who enjoy less strenuous relaxation. Good roads provide ready access to the Atlantic Ocean beaches where the enthusiast may find surf bathing and casting, and numerous facilities for deep sea fishing. In addition nearby swamps and forest lands contain small game, waterfowl and even some big game, while many inland streams and lakes provide excellent opportunities for fresh water fishing and bathing. The ocean beach areas offer many fine hotels, motels and cottages for the summer visitor, while inland there are a number of recreational areas and camps. These are described by counties as follow:

Inland Recreational Facilities

Bladen County

Bladen Lakes State Park, the only park in this Section, lies wholly within the limits of Bladen County and contains the following three popular recreational areas:

White Lake - This popular lake is located in the Town of White Lake and the park on a tributary to Turnbull Creek. The State of North Carolina owns the lake to the high water mark, while the adjacent land is privately owned to this mark. The Town of White Lake has a permanent population of 250 and a summer population of 3,500, although the number of people in the area on a given day may be as high as 7,000. In addition to facilities for bathing and boating, there are three camps:

- | | | |
|----------------|---|--|
| 4H Club Camp | - | Facilities for 110 people |
| FFA Camp | - | Facilities for 420 people |
| Camp Chicogame | - | Facilities for 100 people, (privately-owned) |

Sewage within the Town and at the camps is discharged to septic tanks provided with nitrification lines, while domestic water is derived from wells. The State Board of Health in 1956 investigated the sanitary conditions in the Town

and the surrounding area. The Board found that the proximity of the above se disposal facilities to wells in many instances constituted a potential health hazard. In addition it was found that the high ground water caused the highly nitrified sewage to seep into the lake where the nitrates resulted in algal blooms which created unsightly conditions. Studies conducted in 1955 showed that the lake water had an average coliform bacteria content of 710 per 100 ml and, following heavy rains, a high of 4,300 which exceeded that normally considered safe for outdoor bathing waters.

The Board, as a result of these findings, recommended the installation of both a public water supply system and a sewage collecting system with sewage treatment. In recognition of their responsibilities in protecting the health of the people and White Lake, the Town Officials have caused an engineering study to be made and a preliminary report to be prepared for a sewerage system to include sewage treatment. It is urged that these facilities be installed as rapidly as possible in order that the health of the permanent residents and the thousands of visitors will be fully protected.

Jones Lake Camp - This camp is on Jones Lake which lies in the Park north east of Elizabethtown. The lake and the surrounding land are owned by the State of North Carolina. It, also, is tributary to Turnbull Creek. In addition to boating and swimming, facilities are provided for overnight camping by Negroes. Sewage is discharged to a septic tank with nitrification lines, while domestic water is derived from wells. Studies made of the lake water showed that the average coliform bacteria content was but 32 per 100 ml., while the maximum was but 93, well within the limits normally considered safe for outdoor bathing waters.

Singletary Lake Camp - This camp is on Singletary Lake which is located in the Park and lies southeast of Elizabethtown on Lake Run, tributary to Colly Creek. Group camp facilities are provided for 100 people together with bathing, boating and fishing. Sewage is discharged to a septic tank with nitrification lines, while domestic water is derived from wells. Studies made of the lake water showed that the coliform bacteria content was as little as 23 per 100 ml, and is greater than 240, well within the limits normally considered safe for outdoor bathing waters.

Pages Lake - Bathing facilities only are provided at this lake which lies northwest of Tarheel and consists of an impoundment on an unnamed stream, tributary to Prospect Hall Creek. Bacterial examinations of samples collected from this lake, following heavy rains, showed that the coliform bacteria content on one occasion was 43,000 per 100 ml. and on another occasion was 9,300. These large numbers of bacteria were greatly in excess of the limits normally considered safe for outdoor bathing waters. In the absence of known sources of sewage pollution, it is believed that this objectionable condition was due to surface drainage.

Brunswick County

Camp Pretty Pond, owned by Boy Scouts and Girl Scouts of America, is located on Pretty Pond which lies north of Southport. Pretty Pond is an impoundment on an unnamed tributary to Allen and Lilliput Creeks. Facilities are provided for 45 scouts, including bathing in Pretty Pond. Sewage is disposed of in privies, while domestic water is derived from a well. Coliform bacteria averaged 40,000 per 100 ml. and were as high as 110,000. The abnormal numbers of bacteria were

and after heavy rains and greatly exceeded the limits normally considered to be safe. In the absence of known sources of sewage pollution, it is believed that this objectionable condition was due to surface drainage.

Cumberland County

Camp Osceola is a Girl Scout Camp which is located near, but not on, Country Club Lake north of Fayetteville. There is but one building at the camp which is used for overnight outings. Sewage is disposed of by pit privies, while domestic water is derived from a well. Country Club Lake, an impoundment on Big Cross Creek, is used for bathing and boating by the campers and other people as well. While the lake water is usually of a quality normally considered to be satisfactory for outdoor bathing waters, the average coliform bacteria content was 700 per 100 ml. with a maximum of 24,000, both quantities being excessive. In view of the fact that the excessive numbers of coliform bacteria were found during and after heavy rains, and in the absence of known sources of sewage pollution, it is believed that this objectionable condition was due to surface drainage.

Camp Tom Upchurch and Waldo Beach - Both facilities are located on the north shore of Lake Tom Upchurch which is an impoundment on Rockfish Creek below the point of effluent discharge from Raeford's sewage treatment plant. Camp Tom Upchurch, located downstream from Waldo Beach, has facilities for 100 Boy Scouts with provisions for bathing and boating. Sewage is discharged to a septic tank with nitrification lines and to pit privies. Domestic water is derived from a well. Waldo Beach, which is very popular, provides facilities for bathing, fishing and boating. The discharge of only partially treated sewage from the Town of Raeford poses a constant public health hazard relative to bathing in Lake Tom Upchurch. The average coliform bacteria content of the lake water was 85,000 per 100 ml., while the maximum was 430,000, both quantities greatly in excess of limits normally considered safe for outdoor bathing waters. Before this lake can be considered satisfactory for public bathing, it will be necessary for the Town of Raeford to provide complete treatment for its sewage and waste, including chlorination of the effluent.

Perma-Stone Lake lies southwest of Fayetteville on a tributary to Rockfish Creek. Facilities are provided for bathing only. The bacterial content of the lake water was usually within limits considered safe for outdoor bathing waters; however, the average coliform bacteria content was 4,900 per 100 ml. with a maximum of 24,000. The excessive numbers of bacteria were found following heavy rains. In the absence of known sources of sewage pollution, it is believed that this objectionable condition was due to surface drainage.

Lakewood Lake, an impoundment on Little Rockfish Creek, lies southwest of Fayetteville above all known sources of sewage pollution. Facilities are provided for bathing only. The bacterial content of the lake water was usually within limits normally considered safe for outdoor bathing waters; however, the maximum coliform bacteria content was found to be as high as 9,300 per 100 ml. following heavy rains. In the absence of known sources of sewage pollution, it is believed that this objectionable condition was due to surface drainage.

Hope Mills Pond #1, an impoundment on Little Rockfish Creek near the Town of Hope Mills, is very popular for unorganized bathing, water skiing and boating. This pond is located downstream from the partially treated sewage from the Bonnie Doone sewage plant of the City of Fayetteville on Jacks Ford Branch and the primary sewage treatment plant of the Town of Cumberland (Unincorporated) on a small tributary to Big Beaver Creek. The average coliform bacteria content of

the lake water was 6,600 per 100 ml., while the maximum was 24,000, both quantities being in excess of the limits normally considered safe for outdoor bathing waters. The discharge of the above sewage effluents poses a constant public health hazard relative to bathing in Hope Mills Pond #1. If this pond is to be continued in use for this purpose, it will be necessary for the City of Fayetteville and the Town of Cumberland to make major improvements at their respective sewage treatment plants and to include chlorination facilities for the effluents.

Rainbow Lake, an impoundment on Grays Creek, is located southeast of Hope Mills. Bathing facilities only are provided at this lake. There are no known sources of sewage pollution on or above this lake and the average coliform bacteria content of 740 per 100 ml. is within limits normally considered to be safe for outdoor bathing waters.

McGrogans Lake, an impoundment on Willis Creek, lies southeast of Hope Mills near the Cumberland - Bladen County Line. Bathing facilities only are provided at this lake. There are no known sources of sewage pollution on or above this lake; however, coliform bacteria averaged 7,400 per 100 ml., while the maximum number was as high as 24,000, both quantities being greatly in excess of the limits normally considered safe for outdoor bathing waters. Since the large numbers of such bacteria were found after heavy rains, it is believed that this objectionable condition was due to surface drainage.

Duplin County

Lake Tut is an artificial lake fed by springs. It is located west of Ruffin Hill on Duffs Creek. Bathing and fishing facilities only are provided for Negroes. There are no known sources of sewage pollution tributary to this lake. Since its use for bathing was not discovered for some time after the studies were completed, no samples were collected.

Harnett County

Watsons Lake is located on Daniels Creek near Broadway. Bathing facilities only are provided. There are no known sources of sewage pollution tributary to this lake. Of five samples collected for bacterial examination, only one contained coliform bacteria (9,300 per 100 ml.) in excess of limits normally considered safe for outdoor bathing waters.

Hoke County

Rockfish Creek - A natural pool is used for unorganized bathing on this creek at a point north of the Town of Raeford. The bathing is unorganized in the sense that, while planned, the usual facilities have not as yet been provided. Textile waste was at times discharged to a ditch above the sampling point during the study; however, this waste is now discharged to the Raeford sewerage system. Coliform bacteria averaged 2,700 per 100 ml. during the study with a maximum of 4,300 following heavy rains which exceeded the limits normally considered safe for outdoor bathing waters.

Lee County

Oldhams Lake, tributary to Lick Creek, is located north of Sanford. Bathing facilities only are provided. There are no known sources of sewage pollution tributary to this lake. Coliform bacteria averaged 650 per 100 ml., within limits normally considered safe for outdoor bathing waters.

re County

Swans Lake, an impoundment on a tributary to McDeeds Creek, lies east of thern Pines above all known sources of sewage pollution; however, the lake s receive surface drainage from the Town. Bathing facilities only are provided at the municipally-owned beach. Coliform bacteria averaged 1,300 per ml. with a maximum of 4,300, which exceeds the limits normally considered e for outdoor bathing waters. It is believed that the larger numbers of iform bacteria were due to surface drainage.

Crystal Lake, an impoundment on Mill Creek, is located at Lakeview below point of effluent discharge from Southern Pines' sewage treatment plant. ilities are provided for bathing. Coliform bacteria averaged 14,000 per 100 with a maximum of 43,000, both quantities greatly exceeding limits normally sidered safe for outdoor bathing waters. While the effluent from the Southern es' sewage plant is chlorinated, it is apparent that the present chlorination ilities are not at all times as effective as is desirable. It is concluded, refore, that until needed and planned improvements are installed, including ter chlorinating facilities, the plant effluent poses a constant public health ard relative to bathing in this lake.

der County

Millias Pond is an old borrow pit which lies adjacent to Northeast Cape r River northeast of the City of Wilmington. It is supplied by ground water surface drainage. Extreme flood conditions may introduce river water into pit. Bathing is unorganized. Bacterial samples were collected on two asions. One sample contained 2,300 coliform bacteria per 100 ml., while the ond sample contained 730. While this water appears to meet limits normally sidered safe for outdoor bathing waters, unorganized bathing should be dis- uraged because of lack of safety measures.

mpson County

Williams Lake, tributary to Caesar Swamp, is located north of Salemburg near ls Store. Bathing facilities only are provided. There are no known sources sewage pollution tributary to this lake; however, coliform bacteria averaged 000 per 100 ml. with a maximum of 93,000, both quantities being greatly in ess of limits normally considered safe for outdoor bathing waters. Since the rger numbers of such bacteria were found after heavy rains, it is believed that s objectionable condition was due to surface drainage.

Laural Lake, tributary to Rye Swamp, is located at Salemburg above all known rces of sewage pollution. Bathing facilities only are provided. All samples lected for bacterial examination contained coliform bacteria numbers within its normally considered safe for outdoor bathing waters, except in one instance ere the number was 24,000 per 100 ml. Since this objectionable condition llowed heavy rains, it is believed that it was due to surface drainage.

Atlantic Ocean Recreational Facilitiesder County

Surf City Beach is located south of Hollyridge directly on the Atlantic ean where excellent bathing is enjoyed at both public and private beaches. shing facilities are provided at a pier. Domestic water for a summer popula- on of 200 is obtained from a privately-owned system, while sewage is discharged

to individually-owned subsurface disposal systems. Samples of ocean water were collected at three points along the beaches. The average coliform bacteria content of the water ranged from 110 to 840 per 100 ml., well within limits considered safe for outdoor bathing waters.

New Topsail Beach is located on the ocean about seven miles southwest of Surf City. Excellent bathing is enjoyed at both public and private beaches, fishing facilities are provided at a pier. Domestic water is derived from privately-owned wells, while sewage is discharged to similarly-owned subsurface disposal systems. Samples of ocean water were collected at six points along beaches. The coliform bacteria content of the water was well within limits normally considered safe for outdoor bathing waters.

New Hanover County

Wrightsville Beach has excellent bathing facilities on both Wrightsville Sound and the Atlantic Ocean. Fishing facilities are provided at a pier. There is a public water system supplying a summer population of 30,000, while sewage is discharged to a heavily overloaded primary treatment plant where ineffective chlorinating facilities are provided.

The Wrightsville Sound bathing area lies southwest of the old causeway bridge. Samples of sound water, collected at the bridge, contained coliform bacteria in numbers as high as 21,000 per 100 ml. This reflected the pollution from boats moored in the vicinity of the bridge and possibly pollution from the sewage treatment plant under certain tidal conditions. Samples of water were collected at six points along the bathing area. The average coliform bacteria content of the water varied from 120 to 250 per 100 ml. well within limits normally considered safe for outdoor bathing waters. While this was so, the discharge of sewage into the sound waters from boats moored at the old bridge posed a constant public health hazard to the bathing waters until such use of the bridge area is prevented.

The ocean beaches, both public and private, extend from Moore Inlet to Masonboro Inlet, except that bathing is prevented at the southern end of the island because of treacherous currents. The sewage treatment plant at Wrightsville Beach is designed to treat the sewage from a population of 6,000. This plant is very heavily overloaded in the summer months as an attempt is made to treat the sewage from a population of 27,000. While the relationship, if any, between the sewage polluted water in Moore Inlet and Wrightsville Sound water is not clearly defined, there is positive evidence that this polluted water, reaching the ocean beaches from Moore Inlet to as far south as the vicinity of Crystal Pier.

Twenty-one sampling stations were established during the study program along the length of the outer beach. Each was sampled three times in 1955 and once in 1956. Under conditions of high tide and a southeast wind all samples contained coliform bacteria within limits normally considered safe for outdoor bathing waters. On the other hand, samples collected under conditions of low tide and a northeast wind contained coliform bacteria in objectionable numbers at 10 stations. Two of the stations were on either side of Crystal Pier. The last set of samples was collected in July, 1956, under mean tide conditions and an east wind. While most of the samples were deemed satisfactory, gross pollution was observed at the most northerly station where the coliform bacteria exceeded 240,000 per 100 ml.

In considering the safety of bathing water, great stress is placed upon a sanitary survey of the surrounding area. In this case the overloaded sewage treatment plant at Wrightsville Beach is a definite source of sewage pollution, until such time as it is enlarged and provisions are made for adequate and continuous chlorination of the effluent, it will remain a public health hazard.

Carolina Beach is located south of Snows Cut on the ocean where excellent bathing and fishing are enjoyed by many visitors and summer residents. Domestic water is supplied from a public system to a summer population of 10,000, while treated sewage is discharged to Cape Fear River. Ten sampling stations were located north and south of Fishermans Steel Pier. The average coliform bacteria content of the water ranged from 240 to 1,000 per 100 ml., each being within limits normally considered safe for outdoor bathing waters.

Wilmington Beach lies southerly of Carolina Beach where excellent bathing and fishing are also enjoyed. Hamby Beach, immediately north of this beach, was considered in the study of Wilmington Beach. Domestic water is supplied from a public system to a summer population of about 700, while sewage is discharged to individually-owned subsurface disposal systems. Four sampling stations were located north and south of the pier. The average coliform bacteria content of the water ranged from 240 to 900 per 100 ml. well within limits normally considered safe for outdoor bathing waters.

Kure Beach is located south of Wilmington Beach where the usual beach activities are enjoyed. Domestic water is supplied to a summer population of 1,000 from a public system, while untreated sewage is discharged to Cape Fear River. Six sampling stations were located north and south of the pier. The average coliform bacteria content of the water ranged from 320 to 3,300. The latter is higher than normally considered safe for outdoor bathing waters; however, since there are no known sources of sewage pollution in the area, it is believed that this water should be considered safe for bathing.

Currituck County

Fort Caswell Beach is located on the ocean west of Cape Fear River at the State Baptist Assembly Grounds. Domestic water is derived from wells for a summer population of 1,200. Untreated sewage is discharged into Cape Fear River. Eight sampling stations were established along the beach, beginning at a point near the outfall where bathing was at one time permitted. Since that time bathing is permitted only in the vicinity of the lighthouse, where the water was found to have coliform bacteria within limits normally considered safe for bathing waters. The bathers, however, are encouraged to use Yapon Village Beach, presently in the developing stage, which lies remote from sources of pollution.

Long Beach lies westerly of both Yapon Village Beach and Fort Caswell Beach. Domestic water is derived from wells, while sewage is discharged to privately-owned subsurface disposal systems. Excellent bathing only is enjoyed at this beach. In view of the satisfactory samples of ocean water collected at the westerly end of Fort Caswell Beach, no samples were collected at either this beach or Yapon Village Beach.

Both maps and tables are found elsewhere in this report which show the relative locations of the various sampling stations and the analytical data.

Transportation

The entire Main River Drainage Area is served by a large network of Federal and State highways. U. S. Highways 301, 421, 401 and State Highways 87 and 21 accommodate north-south vehicular traffic, while U. S. Highways 17, 74 and 76 State Highways 41 and 24 provide for the east-west traffic. The more populated areas are well served by railroads. The main line of the Atlantic Coast Line passes through Wilmington, while the main line of the Seaboard Airline Railroad passes through Fayetteville with branch lines extending southeast to Wilmington. The Fayetteville area is also served by the Aberdeen and Rockfish Railroad. In addition to these highway and rail connections, the area is served by Piedmont Airlines and National Airlines through Airfields at Fayetteville and Wilmington. The Cape Fear River is navigable by large ocean going ships to Wilmington and by barges and smaller boats to Fayetteville. The navigable waters above Wilmington have been made possible by a series of three locks built and maintained by the U. S. Corps of Engineers. Lock No. 1, with an eleven-foot lift, is located at Kings Bluff 39 miles upstream from Wilmington. Lock No. 2, with a nine-foot lift, is located at Browns Landing two miles downstream from Elizabethtown, while Lock No. 3, with a nine-foot lift, is located near Tarheel 20 miles downstream from Fayetteville.

GENERAL SURVEY FINDINGS

For convenience in presenting the survey findings relative to present and potential water and land usage, Cape Fear River has been divided into five segments which are fairly well defined from the viewpoint of usage and topographic characteristics. Significant water and land uses together with data relative to such uses are presented for each segment. These data are also summarized in Table No. 18, Public Surface Water Supplies; Table No. 19, Industrial Surface Water Supplies; Table No. 20, Public Ground Water Supplies; Table No. 21, Industrial Ground Water Supplies; Table No. 22, Points of Significant Sources of Pollution; Table No. 23, Analytical Results; and Table No. 24, Recommended Classifications.

SEGMENT I. CAPE FEAR RIVER AND ITS TRIBUTARIES FROM JUNCTION OF DEEP AND HAW RIVERS TO U.S. HIGHWAY 301 BRIDGE AT FAYETTEVILLE

While the economy of this segment of the river centers around agricultural activities, Erwin is a center of textile processing and Pinehurst and Southern Pines are popular winter resorts. Valuable woodlands border many of the streams, which are sources of supply for lumber and pulpwood. While there are no large centers of population other than Fort Bragg, there is considerable activity employing the use of the streams.

There are nine public surface water supplies and two surface water supplies in the segment. Carolina Power & Light Company, Cape Fear Steam Plant, takes 36.32 m.g.d. of water from the Cape Fear River a short distance below Deep and Haw Rivers for condensing, boiler makeup, ash flushing and domestic purposes. The water for boiler makeup and domestic purposes receives conventional treatment. While Haw and Deep Rivers are heavily polluted upstream from this plant, considerable recovery takes place before they form Cape Fear River. Consequently, the water is usually satisfactory for use in boilers, although foaming has occurred under low-flow conditions. Coliform bacteria are usually within acceptable limits for conventional treatment for domestic use, although there is an occasional sample with unsatisfactory numbers of such bacteria. The heated condenser water is returned to the river via a canal some six miles in length. No complaint has been made of this practice, although the Company found it necessary to extend the canal from a length of two miles to six miles in order that the water could be satisfactorily cooled. The City of Sanford secures raw water from impoundments on Lick and Daniels Creeks and an emergency supply from Oldhams Lake. After conventional treatment, 1.1 m.g.d. are supplied to a population of 3,500. The Town of Lillington supplies 75,000 g.p.d. from the Cape Fear River to a population of 1,600, after conventional treatment. The Town of Dunn, after conventional treatment plus pre-chlorination, supplies 1,280 m.g.d. from Cape Fear River to a population of 10,200 and to Erwin and Erwin Mills. Pinehurst, Inc. has two raw water intakes on Rattlesnake Creek and one on Juniper Branch. After slow sand filtration and post-chlorination some 200,000 g.p.d. are supplied to a population of 1,600. The Town of Southern Pines derives raw water from a series of reservoirs on Mill Creek. Water from the lower reservoir flows to the filter plant by gravity where it receives conventional treatment plus pre-chlorination. An average of 500,000 g.p.d. is supplied to a population of 7,000. The Town of Warthage secures water from springs and a spring-fed reservoir located in the Deep River Drainage Area; however, a standby reservoir on Dunham Creek is used

as needed. Fort Bragg supplies 3.0 m.g.d. of water to some 42,000 persons from a dam on Lower Little River. The water receives conventional treatment plus pre-chlorination. The City of Fayetteville is installing an intake into Cape Fear River at a point above Cross Creek as a supplemental water supply. This water will be pumped to one of the existing impoundments where it will receive some natural purification before being pumped to the filter plant. Water for sand and gravel washing is derived from Upper Little River by the Becker Cour Sand and Gravel Company. For some time after this plant was put into operation downstream water users on Upper Little River complained of turbid water from these operations; however, the turbid water is now being settled prior to discharge to Cape Fear River, apparently without complaint. Water for sand and gravel washing is pumped from Lower Little River by the Cumberland Gravel and Sand Company at a point upstream from the Fort Bragg intake. The Army has complained of turbid water from these operations at times.

There are four recreational areas in the segment; namely, Oldhams Lake, Watsons Lake, Swan Lake, and Crystal Lake, which have been previously described.

Water for irrigation is taken from Upper Little River and from some of the smaller streams, although farm ponds appear to be largely used for this purpose. In addition, some of the streams are used for stock watering.

The Carolina Power & Light Company maintains a hydro-electric power station at a dam on Buckhorn Creek which is largely supplied with operating water via this creek from Buckhorn Dam on Cape Fear River. The chief value of the Cape Fear River impoundment is to provide a circulation basin for the cooling water for the Cape Fear Steam Plant.

Fishing is enjoyed on Cape Fear River and in a number of tributaries with particular mention being made of Buckhorn Creek, Whiteoak Creek, Parkers Creek, Neils Creek, Thortons Creek, Wallace Creek, Lick Creek, Little Lick Creek, Stony Creek, Brush Creek, Little Juniper Creek, Juniper Creek, Upper Little River near mouth, Lower Little River above Vass and Anderson Creek. Access areas are provided at a number of places.

Many of the streams are used for the disposal of sewage and industrial waste. There is a total P.E. (based upon 20°C 5-Day B.O.D.) of 59,046 before treatment and 18,671 after treatment which represents a 68% reduction in pollution to the receiving streams. There are a total of 14 sources of pollution which are discussed as follows:

Carolina Power & Light Company, Cape Fear Steam Plant at Moncure - The steam plant generates electric power and there is no organic waste involved, except partially treated sewage from some 115 employees and 25 residents who live in nearby houses. Sewage from four families is discharged to a septic tank with nitrification lines, while that remaining is discharged to a septic tank with an effluent line to the large impoundment on Cape Fear River formed by Buckhorn Dam. In view of the fact that the larger quantity of sewage enters the recirculation impoundment but a short distance downstream from the combined industrial and domestic water intake, this sewage should either receive additional treatment or be disposed of by subsurface means. As noted previously under Hatteras River Drainage Area, the present method of disposal of ashes is satisfactory, although at one time it presented a problem. Some 256 m.g.d. of cooling water is presently discharged into a canal which is connected to the river about six miles below the plant. In 1954 the condenser water was not materially changed.

character, except the temperature was raised from an average of 28°C to 33°C. It still averaged 33°C at the end of the canal then but two miles long. In anticipation of expansions in generating capacity, it was decided to lengthen the canal to insure adequately cooled water at the intake. Recently, all of the new units were installed and the adequacy of the cooling facilities will be fully determined in the near future. It should be noted that no complaints were received as to any ill effects of the heated water upon fish life. In fact, the canal is reported to be an excellent fishing stream for certain species.

Town of Fuquay Springs operates a primary sewage treatment plant that is serving a population of 2,000. The present plant, designed for a population of 1,700, is obviously overloaded. The effluent is discharged into Kenneth Creek which is devoid of dissolved oxygen at times and contains an average coliform bacteria content of 10,000,000 per 100 ml. below the outfall. The stream water has a slight sewage odor and a gray color, while the stream bed contains sludge deposits. The sludge from the drying beds is not hauled off regularly but is merely placed in large piles next to the beds. The stream above the outfall has been visibly polluted by garbage and drainage from a sanitary land fill, and possibly by drainage from private outfalls. It should be noted that this sewage treatment plant is located above the Town of Lillington water supply which is derived from Cape Fear River below Neils Creek. Plans for additions and enlargements should be made for this plant or possibly plans for complete replacement of the entire plant, taking into consideration inclusion of those parts of Town that are not yet sewered. In this connection, there is some evidence that Kenneth Branch, which receives surface drainage from the west side of Town, is receiving incidental drainage from privately-owned sewage disposal systems. The officials of the Town of Fuquay Springs have not been unmindful of their responsibilities in these matters. An engineer has been employed and a preliminary report prepared.

Town of Lillington discharges untreated sewage from a population of 1,200 into Cape Fear River at a point just below U. S. Highway 401 bridge and about .5 miles above the Dunn water intake in this river. While there is great dilution of this untreated sewage during normal river flows, this is not the case during extended periods of deficient rainfall. The analytical data, collected during a wet period, do not, therefore, reflect critical conditions. The river water immediately below the outfall is discolored with sewage, while the river bed at the outfall is covered with sludge deposits which are flushed downstream during periods of high flow. Until this sewage receives appropriate treatment, it poses a constant public health hazard to the water supply of the Town of Dunn, the Town of Erwin and Erwin Mills.

Campbell College at Buies Creek - The college operates a sewage treatment plant consisting of a septic tank, which serves a population of 550 including the student body and the occupants of several houses near the campus. Buies Creek as it enters Cape Fear River, some 4.7 miles above the Dunn water intake, contains considerable numbers of coliform bacteria. Here again the analytical data do not reflect critical conditions because of the high dilution of the sewage effluent. In view of the location of this sewage treatment plant above the Dunn water intake, a public health hazard is involved which can only be corrected by the installation of additional treatment devices at this plant.

Becker County Sand and Gravel Company, Senter Plant near Lillington - This Company owns and operates a sand and gravel plant on Upper Little River. Water is pumped from Upper Little River and used to wash sand and gravel. After such use, it is settled and discharged through a ditch some 7,800 feet in length to Cape Fear River at a point above the Dunn water intake. During the stream studies, the unsettled waste was returned to Upper Little River. This resulted in complaints by downstream owners who used the water for irrigation and stock watering; hence, commendable corrective measures were taken by the Company to satisfy the downstream complainants.

Sanford-Jonesboro Plant - Sewage from the Jonesboro part of the City, at the time of the stream studies, was discharged to an Imhoff tank with sand filters that appeared to be greatly overloaded. The effluent from the plant entered a small stream that carried very little natural flow. The stream bed for a considerable distance was covered with sludge, while the water had a strong sewage odor. In recognition of their responsibilities in this matter the City Officials had plans and specifications prepared which were approved by both the State Board of Health and the State Stream Sanitation Committee. As a result of these approvals, a new trickling filter plant was located some distance downstream from the old plant where more dilution water is available. If this plant is operated properly, it should protect the stream for some time into the future. The City is to be highly commended for taking this important step in protecting the receiving stream.

Moore's Dairy, Erwin, discharges waste from the milk plant into Stuart Creek, sometimes known as Juniper Creek, above the untreated sewage and industrial waste from Erwin and Erwin Mills. The milk plant waste discolors the stream, increases the biochemical oxygen demand (B.O.D.) and the numbers of coliform bacteria, and decreases the dissolved oxygen. Corrective measures are indicated.

Erwin and Erwin Mills - Erwin Mills owns an outfall sewer on Stuart or Juniper Creek which discharges untreated sewage from a population of 3,200 and untreated industrial waste from the mills which is largely waste from the finishing room. The P.E. of the combined sewage and waste is 9,200. Stuart Creek below the outfall is highly discolored by dyes from the textile operations, while the stream bed contains a black sediment and sludge deposits. The dissolved oxygen in the stream water is reduced to zero on occasion, while the B.O.D. averages 120 ppm. Coliform bacteria are found in numbers as high as 24,000,000 per 100 ml.

Cape Fear River at the N. C. Highway 217 bridge 0.6 of a mile below Stuart Creek, particularly under low-flow conditions, is discolored by dyes discharged from the mills. Stream studies were conducted in this area during an extended period of high river flows in 1955. Even with great dilution, coliform bacteria averaged 45,000 per 100 ml. at this bridge and 15,000 per 100 ml. at the new U. S. Highway 301 bridge located above the pollution from Fayetteville and 26 miles below the pollution in Stuart Creek and 37 miles below the pollution in Lower Little River. The supplemental water supply of the City of Fayetteville is located about one mile above this bridge where the presence of such large numbers of coliform bacteria are undesirable and form a public health hazard. A fish kill in Cape Fear River, both above and below Fayetteville, was studied in June, 1956. It is believed that the sewage and waste from the Erwin Area played major roles in this unfortunate incident.

Obviously, the untreated sewage and waste from Erwin and Erwin Mills in Stuart Creek must receive adequate treatment. Since the industrial waste contains toxic materials, complete treatment is indicated. Although the untreated

plant waste from Moores Dairy presents a much smaller problem, its discharge at a point above the Fayetteville intake requires corrective measures. The pollution in Lower Little River, also above this intake, will be dealt with later on in the report.

Pinehurst, Inc. has a sewage system that serves a population of 1600 people. Part of the sewage is diverted to a sewage treatment plant on a stream tributary to Lumber River while the remainder is now discharged to a stabilization pond on Board Creek. At the time of the stream studies the sewage was discharged to an old treatment system consisting of a dug pit where the sewage was settled after aeration and discharged to Board Creek. At the time of the stream studies many of the solids settled out in the effluent ditch causing very undesirable conditions. Below the stream below this ditch had an average B.O.D. of 6.8 ppm and contained coliform bacteria as high as 930,000 per 100 ml. Since these studies, the Corporation has constructed a waste stabilization pond and is now experimenting with chlorination. More time and study are needed to determine the efficiency of a treatment facility of this kind in this area.

Town of Southern Pines operates a trickling filter plant that discharges effluent to McDeeds Creek. The system serves a population of 4,000 and contains no industrial waste. The effluent from this plant reduces the dissolved oxygen in the stream to as little as 2.5 ppm at times and increases the numbers of coliform bacteria to such values as to be a public health hazard to bathing in Crystal Lake. The Town, in recognition of its responsibility in this matter, has initiated a program to study the possibility of making needed enlargements and improvements of the present sewage treatment plant. Consideration should be given to constant and adequate chlorination of the effluent during the summer months to protect the water quality downstream in Crystal Lake.

Cumberland Gravel and Sand Company near Fort Bragg takes water from Lower Little River and uses it in the sand and gravel washers. This wash water in the form of a slurry is sluiced onto an embankment where the sand falls out but with the fines and organic matter remaining in the water. It then flows to Buffalo Creek. This causes a heavy turbidity in Buffalo Creek and for a considerable distance downstream in Lower Little River. Generally the river has cleared up in less than one mile; however, complaints have been made as to the presence of excessive turbidity at the Fort Bragg water intake.

Fort Bragg - The sewerage system serves both Fort Bragg and Pope Air Force Base. While the number of service and civilian personnel is very unstable, there appears to have been as many as 42,000 present in the early stages of the study. The sewage is treated in a well-designed trickling filter plant. While this excellently-maintained plant removes from 85% to over 90% of the oxygen consuming properties of the sewage, larger numbers of coliform bacteria are found in the creek water below the effluent outfall on occasion than are desirable. This unsatisfactory condition can be readily corrected by means of effective chlorination.

The samples collected in this area reflect the unusually wet summer in that samples collected from populated areas above sources of pollution frequently contained coliform bacteria due to surface drainage. This appeared to be true at Sampling Station 209 on Lower Little River above the effluent outfall which is below storm sewers within the Pope Air Force Base. The same was true for Sampling Station 211 on McDuffie Creek except in this instance it is believed that incidental drainage from household subsurface sewage disposal systems was

reaching the stream. This conclusion resulted in the Cumberland County Health Department recommending against bathing in the Brooks Trailer Camp pool on McDuffie Creek. A complaint was investigated which alleged that oily waste was escaping from the air field area into McDuffie Creek. It was found that, while surface drainage was reaching this creek from the area in question, the oily waste was due to mosquito control measures.

Brooks Trailer Camp contains 75 trailers which are usually occupied to capacity. These trailers are served by several septic tanks which have either underdrains or sand trenches; however, some of the drains or trenches can be draining to McDuffie Creek, along with drains from private residences in the vicinity. This stream also receives storm drainage from the air base as noted previously. The stream has a grayish, sewage-like appearance and contains coliform bacteria in large numbers. The laundry waste is discharged untreated through a ditch leading to Lower Little River. The combination of all of these wastes has caused a green slime to form along the right bank of Lower Little River for at least 300 ft. downstream. It is obvious that corrective measures are required if McDuffie Creek and Lower Little River are to be protected.

Spring Lake Enterprises, Inc. operates a sewage treatment plant for a population of 3,200. The treatment plant employs the Hayes Process which is not very effective as studies of the sewage as it flows through the plant show an efficiency of but 50% in reduction of B.O.D., and 15% in total solids. The plant effluent is discharged to a small stream which enters Lower Little River below McDuffie Creek. The dissolved oxygen in the small stream, which lies at no great distance from a number of houses, is reduced to as little as 1.5 ppm and from the complaints as to odors reaching this office, the dissolved oxygen must be zero at times. Part of the odor complaint, however, involves the plant itself which is poorly maintained and operated. The water in the small stream has a B.O.D. as high as 58 ppm and an average coliform bacteria content of 25,000,000 per 100 ml., both quantities being excessive for such a small stream. The effluent also affects adversely the water of Lower Little River. The dissolved oxygen is reduced from an average of 6.2 ppm from above the small stream to an average of 5.6 ppm below, while the B.O.D. is increased from 2.8 ppm to 3.6 ppm and the coliform bacteria from 2,000,000 per 100 ml. to 3,200,000 per 100 ml. In view of all the facts presented, corrective measures are imperative.

While these sources of pollution lie a considerable distance upstream from the City of Fayetteville supplemental water supply intake in Cape Fear River, the polluted water in Lower Little River, nevertheless, affects the quality of water in Cape Fear River and threatens the safety of the Fayetteville water supply.

Summary Discussion of Pollution in Segment I

Cape Fear River above the Cape Fear Steam Plant of Carolina Power & Light Company is usually satisfactory for generation of steam except during periods of extreme low-flow. In addition, the coliform bacteria content of the water appears to be usually satisfactory for conventional treatment for domestic purposes, although such bacteria exceed desirable limits from time to time. In this connection, this condition will not be entirely eliminated until proper corrective measures have been taken at the steam plant sewage disposal system and at larger upstream sources of pollution. While the discharge of heated cooling water from the steam plant has not resulted in complaints as to its effect upon fish life, the expanded facilities remain to be tested under critical conditions. The present effluent from the Fuquay Springs sewage treatment plant poses a public

alth hazard to the Lillington water supply from Cape Fear River. The discharges of untreated sewage by Lillington and of partially treated sewage by Campbell College pose public health hazards to the water supply of Dunn, Erwin and Erwin Mills which is also taken from Cape Fear River.

The discharge of untreated sewage and industrial waste by Erwin Mills and the objectionable conditions in the Spring Lake area pose public health hazards to the supplemental water supply of Fayetteville.

A matter of considerable importance is the discharge of waste containing large quantities of fluorides from fertilizer plants at Greensboro and Durham in relation to the public water supplies derived from Cape Fear River. In 1954, during the low river flows of that year, it was found that the fluoride content of the water at the Dunn Intake exceeded limits normally considered safe for human consumption.

The present effluent from the Southern Pines sewage treatment plant is a constant threat to bathing in Crystal Lake. While there are presently no complaints to the discharge of turbid water from the operations of the Becker County Sand and Gravel Company, such operations at the Cumberland Gravel and Sand Company have resulted in complaint by Fort Bragg. Good fishing is reported in Cape Fear River and a number of its tributaries. While this is so, at least one fish kill was reported in the river below Erwin and Lower Little River.

Sanford is to be commended for constructing a much-needed sewage treatment plant. Becker County Sand and Gravel Company also is to be commended for taking corrective measures on receiving complaints relative to the turbid waste from their operations. Those who have initiated action should complete their projects as rapidly as possible and those who have not initiated necessary action should do so immediately.

SEGMENT II. CAPE FEAR RIVER AND ITS TRIBUTARIES FROM U.S. HIGHWAY 301 BRIDGE AT FAYETTEVILLE TO U.S. CORPS OF ENGINEERS LOCK #2 AT ELIZABETHTOWN

The economy of Segment II, as for the previous segment, centers around agricultural activities; nevertheless, there is considerable textile processing activity in Cumberland, Hope Mills, and Raeford, while Fayetteville has a diversified industrial activity which includes textiles. Here again, lumber and pulpwood production are a part of the farm economy. While there are no large centers of population other than Fayetteville, considerable use is made of the streams in this segment.

Fayetteville is the only municipality using surface waters as sources of domestic water supply. Glenville Lake on Little Cross Creek is the primary source of water supply which is supplemented with water pumped from Cross Creek and more recently provisions have been made to pump water from Cape Fear River. In each instance the supplemental water is pumped to Glenville Lake prior to use. After conventional treatment 4.0 m.g.d. of water are supplied to a population of 42,860.

Hydroelectric power stations are maintained on Little Rockfish Creek by Rockfish-Mebane Yarn Mills and on Rockfish Creek by Brower Mills. Lake Tom Upchurch is also a source for such power.

There are nine recreational areas in the segment; namely, Raeford Bathing Area on Rockfish Creek, Lake Tom Upchurch (Waldo Beach and Camp Tom Upchurch), Irma-Stone Lake, Lakewood Lake, Hope Mills Pond #1, County Club Lake (Camp Ceola), Rainbow Lake, McGrougans Lake and Pages Lake.

Water for irrigation is taken from some of the smaller streams but most from farm ponds. In addition, some of the streams are used for watering livestock.

Good fishing is reported in Cape Fear River and in a number of its tributaries with particular mention being made of Rockfish Creek, from and including Lake Tom Upchurch to its mouth, Cedar Creek, Phillips Creek, Little Single Lake, Suggs Mill Pond and Salters Pond. Access areas are provided at a number of places.

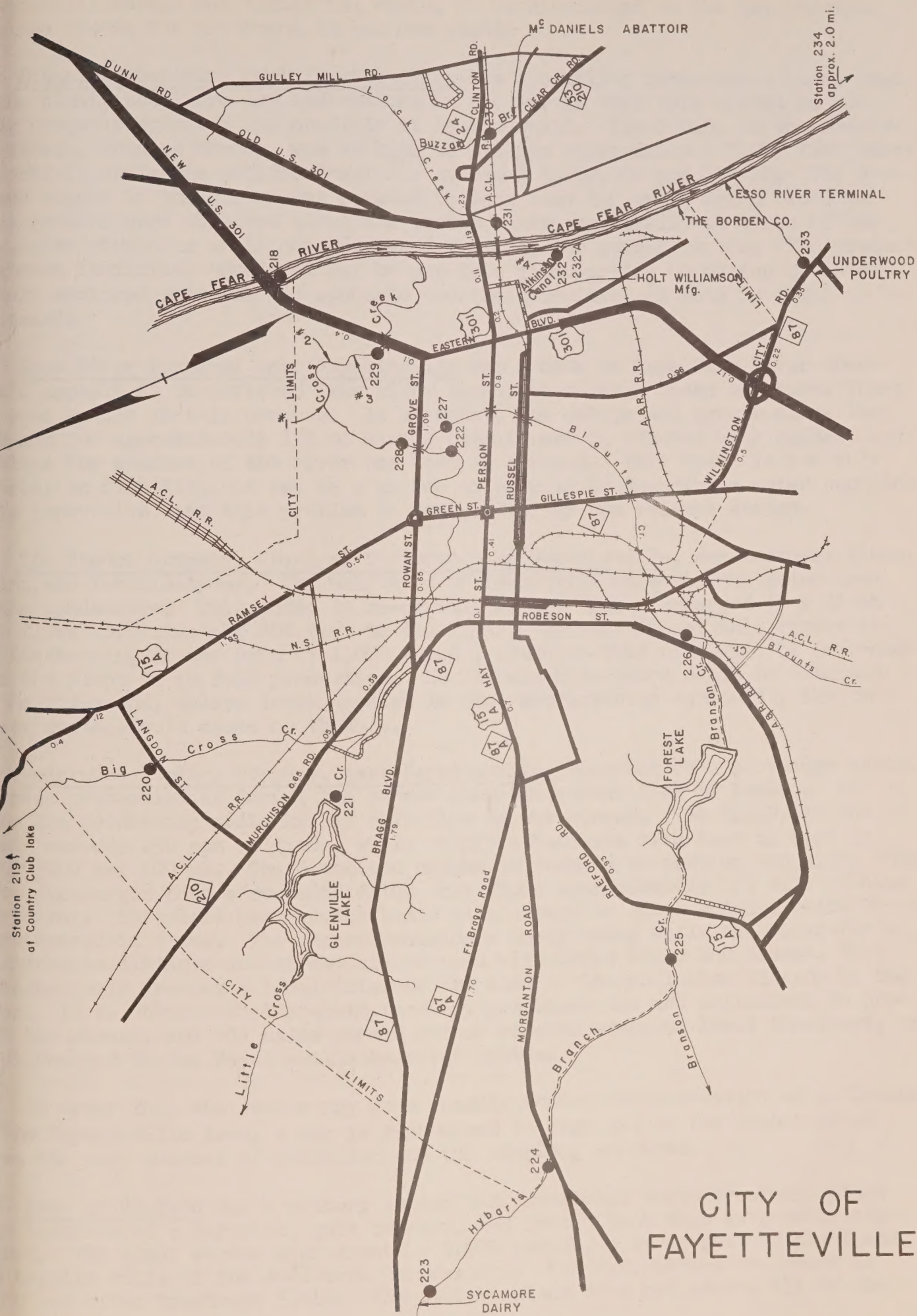
An important use of Cape Fear River is navigation below Fayetteville which is provided by a series of locks, of which Locks #2 and #3 are in this segment.

Many of the streams are used for the disposal of sewage and industrial waste. There is a total P.E. of 64,206 before treatment and 61,264 after treatment which represents a reduction of but 5% in pollution to the receiving streams. This picture will be changed materially as soon as Fayetteville completes its new sewage and industrial waste treatment plant. There are a total of 15 sources of pollution in the segment which are described as follows:

Sycamore Dairy, Fayetteville, discharges untreated milk plant waste into Hybarts Branch. While the loading from this plant was not made available to this office, it is considerable for a stream which is dry at times. The dissolved oxygen in the stream below the plant is reduced to zero on occasion, while the B.O.D. is as high as 830 ppm and the coliform bacteria are in numbers as high as 1,500,000 per 100 ml. This waste not only creates a nuisance in the stream immediately below the plant, but causes large growths of algae in the pond further downstream. Either very complete treatment should be given to the waste or it should be discharged into the Fayetteville sewerage system.

City of Fayetteville presently discharges untreated sewage and/or industrial waste into Cross Creek and Atkinsons Canal. Both streams show evidence of gross pollution. In addition, the analytical data show that both Cross Creek and Blounts Creek above the sewer outfalls are receiving large amounts of pollution from industries and possibly from unknown private sewers. Cape Fear River shows the effects of the Fayetteville pollution. The dissolved oxygen in the stream below the pollution is reduced to as little as 1.8 ppm and coliform bacteria are found in large numbers. In 1956 this pollution contributed to a fish kill. The officials of the City of Fayetteville, in recognition of their responsibilities in these matters, submitted plans for a new sewage treatment plant to both the State Board of Health and the State Stream Sanitation Commission for approval. Approval was given and the plant is now well under way. When completed, fish life in the river should be adequately protected from this source of pollution and any doubt as to adverse effects of this pollution upon the Wilmington water supply will be removed. The City should take immediate steps to enact ordinances prohibiting discharge of untreated waste to its streams and adequate provisions for preventing injury to the new sewage and industrial waste treatment plant.

Holt-Williamson Manufacturing Company at Fayetteville discharges an average of 47,000 g.p.d. of industrial waste into Atkinsons Canal upstream from the Fayetteville outfall. A study of this industrial waste showed a B.O.D. as high as 390 ppm and indicated the presence of certain toxic elements such as cyanide, sulfide, phenol, and chromium. This waste adds to the gross pollution in the



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FAYETTEVILLE

stream and should either receive the same degree of treatment as to be given the Fayetteville sewage and industrial waste, or be discharged to the Fayetteville sewerage system for treatment in the new plant.

McDaniel Abattoir, East Fayetteville, has a settling basin and a blood trap at the plant, but there are indications in the stream that this system is not being properly operated and possibly it is too small. The B.O.D. in the receiving stream, Buzzard Branch, was as high as 120 ppm approximately 1,000 feet below the outfall, while the coliform bacteria averaged 3,000,000 per 100 ml. The dissolved oxygen in the stream was reduced to less than 1.0 ppm. Dried blood and gaseous growths were observed along the stream banks, especially at times of low flow. The stream is small and becomes dry during the summer months. The present treatment facilities should either be put into good working condition or be completely replaced with new and adequate treatment devices, if this is found to be necessary.

Esso River Terminal near Fayetteville has a dock on Cape Fear River where liquid asphalt is transferred from river barges to storage tanks on shore. There are some spills in this process. As a result, the debris and growth along the dock and for approximately 1/3 of a mile downstream is covered with asphalt and at times the surface of the river has been so covered. This waste is not only a threat to fish life but may be a source of phenols in downstream water supplies. It is imperative that this problem be controlled for the reasons stated.

The Borden Company, Chemical Division near Fayetteville, manufactures glues, resins, and formaldehydes. The only type of industrial waste is the water used in the condensers. This water is re-circulated and then discharged to a ditch that flows approximately 200 feet to the river. At the time of this report it was discharging at the rate of 1,000 g.p.d., although this rate will be increased when the plant is in full production. No formaldehyde odors could be detected in the river and, unless leaks develop in the manufacturing equipment, the condenser waste should cause no trouble.

Underwood Poultry Company, near Fayetteville, operates on a part-time basis. The peak production is during the summer when the stream flow is lowest. At times the processing waste is the only flow in the stream. The B.O.D. in the stream exceeds 250 ppm at times, while coliform bacteria have been as high as 3,000,000 per 100 ml. The dissolved oxygen is reduced to zero on occasion. This waste discharges into a roadside ditch that flows approximately 1/2 mile to Cape Fear River. The plant has a catch basin with screen to catch solids, while blood is recovered in drums. The stream contains a heavy scum, while the banks for a considerable distance downstream are covered with dried blood and sludge. This waste not only creates a local nuisance but adds to the pollution already in the river. It is obvious that present recovery practices are not sufficient to protect the stream, and the waste should either receive adequate local treatment, or be discharged to the Fayetteville sewerage system.

In order that the reader may more readily follow the discussion of pollution in the Fayetteville Area, a map is reproduced on page 323 of the report which shows the main sources of pollution and the sampling stations.

Town of Raeford has a primary sewage and industrial waste treatment plant that consists of a bar rack, grit chamber, and Imhoff tank that is greatly overloaded. The plant serves approximately 3,000 people, a large poultry plant and the textile mills of the Amérottron Corporation. The P.E. before treatment is 300 and after treatment 5,040. The poultry plant does not remove all of the

solids and blood from its waste which, consequently, can be seen floating on the surface of the Imhoff tank. The mills of Amerotron Corporation pretreat the textile waste for removal of chromium and neutralizes the pH before discharge into the Town system. The Town plant presently discharges directly to Rockfish Creek. During the stream study period in 1955, the plant effluent discharged into Pedlers Branch which was found to be grossly polluted. In 1956 the outfall was extended to Rockfish Creek some distance downstream from Pedlers Branch. Rockfish Creek below the new outfall contains sludge deposits, foam floating grease. Although there is a good, sustained flow in Rockfish Creek large numbers of coliform bacteria were found in the water as far downstream as the bathing areas in Lake Tom Upchurch. These bacteria were in such numbers to greatly exceed limits normally considered safe for outdoor bathing waters has been noted previously in this report. This public health hazard can be improved by providing complete treatment for this partially treated sewage and waste and by chlorination of the effluent but cannot be completely eliminated by such means.

Brower Mills at Hope Mills, discharges untreated domestic sewage into Rockfish Creek just below the tailrace from the power plant. While the untreated sewage has no apparent physical effect upon the stream, coliform bacteria are found in numbers as high as 150,000 per 100 ml. The installation of a septic tank with nitrification lines would completely remove this waste from the stream.

Bonnie Doone is an unincorporated community in Cumberland County. It is outside the City of Fayetteville, but the sewage plant is now owned and operated by this City. The plant, consisting of a bar screen, Imhoff tank, siphon, and sand filters, serves approximately 1,500 people. The plant effluent is discharged to Jacks Ford Branch. This stream has a heavy gray color and a strong sewage odor while the banks of the stream are covered with sludge. The stream, approximately 1,000 feet below the effluent outfall, has an average B.O.D. of 36 ppm and a coliform bacteria content as high as 94,000,000 per 100 ml. It has been noted previously that the effluent from this plant poses a public health hazard to bathing in Hope Mills Pond #1. Even with major improvements, including chlorination of the effluent, this public health hazard cannot be completely eliminated.

Town of Cumberland (Unincorporated) has a sewage treatment plant that consists of a bar rack, an Imhoff tank, and open sludge beds. The plant serves a population of 260. The effluent from the plant has a slight septic odor and a light gray color. The receiving stream has but little flow in dry weather. Although Little Rockfish Creek below this effluent and upstream pollution contains coliform bacteria in numbers as high as 39,000 per 100 ml., the full effects are not felt in Hope Mills Pond #1 where there is a marked reduction in dissolved oxygen. As mentioned previously, the effluents from this plant and the Bonnie Doone plant pose public health hazards to bathing in Hope Mills Pond #1. As for the Bonnie Doone plant, the public health hazard can be improved but cannot be completely eliminated by major changes.

Town of Hope Mills has a sewage treatment plant that consists of a bar screen and an Imhoff tank that serves a population of 1,500 people. The effluent is discharged into Little Rockfish Creek. The creek has a heavy flow and a fast sharp fall until it reaches the backwaters of Cape Fear River. The effluent has a slight septic odor and floating solids can be seen on the surface of the creek. The main effect of this effluent is to cause a marked increase in coliform bacteria which were in numbers as high as 930,000 per 100 ml. This plant is in need of maintenance, good housekeeping, and constant proper operation.

Thomason Plywood Corporation and Southern Resin and Glue Company at Vander are located adjacent to each other and use the same industrial waste ditches. Thomason Plywood Corporation makes plywood and Southern Resin and Glue Company manufactures urea, formaldehyde, and resin. The untreated wastes are discharged to the ditches which are very swampy and in part covered with bark. The stream water has a strong odor of formaldehyde at times and contains as much as 0.7 ppm of this substance. The B.O.D. of the stream water is as high as 130 ppm, while coliform bacteria are found in large numbers and grease in amounts exceeding 500 ppm. The receiving stream is very small and in the summer the flow consists largely of these wastes.. As might be expected a nuisance results which is accompanied by numerous complaints. Obviously corrective measures are necessary.

Becker County Sand and Gravel Company - Vander Plant. This plant was not operated during the latter part of the study but was subject to possible reopening in 1958. In former years, the practice was to discharge wash waters upon the river bank where they drained into the river together with large enough quantities of silt as to impede navigation. This caused the company to dredge the river from time to time. Silting of the river bottom, under such circumstances, not only impedes navigation but affects fish life by destroying fish food and possibly bedding areas. Should this plant be reopened, provisions should be made for adequate sedimentation of the wastes prior to discharge into the river.

Town of Elizabethtown has a sewage system that discharges untreated domestic sewage directly into Cape Fear River. The system serves 2,000 people, and contains no industrial waste. Due to the rather large river flow at this point, the chief effect of this untreated sewage is to increase the numbers of coliform bacteria in the river water which are a public health hazard in relation to the public water supply of the City of Wilmington which is taken from the river at a point a short distance upstream from Lock #1. Corrective measures are, therefore, indicated for protection of this water supply.

Summary Discussion of Pollution in Segment II

The largest single polluter in this segment of Cape Fear River is the City of Fayetteville; nevertheless, the discharge of untreated industrial waste from Weymores Dairy, Holt-Williamson Manufacturing Company, McDaniel Abattoir, Esso River Terminal, and Underwood Poultry Company all contribute directly or indirectly to the pollution of the river and in all instances create nuisances. The discharges of partially treated sewage and/or industrial waste by the Town of Raeford, Town of Cumberland and the Community of Bonnie Doone create public health hazards at downstream bathing areas. The untreated sewage from the Town of Elizabethtown creates a public health hazard to the City of Wilmington water supply from Cape Fear River. Good fishing is reported in Cape Fear River and a number of its tributaries. In this connection, the untreated sewage and industrial waste in the Fayetteville area contributed to a fish kill in the river in 1956.

The City of Fayetteville is to be highly commended for planning and constructing a modern sewage and industrial waste treatment plant. When it is completed, it will reduce in large measure the largest percentage of pollution in the segment. While this is so, it is very important that each polluter take appropriate action to correct his share of the overall pollution. Accordingly, those who have not taken necessary action should do so immediately.

SEGMENT III. CAPE FEAR RIVER AND ITS TRIBUTARIES FROM U.S. CORPS OF
ENGINEERS LOCK #2 TO RAW WATER SUPPLY INTAKE FOR RIEGEL
PAPER CORPORATION

This segment is sparsely populated and contains no large towns. The economy is largely from agricultural pursuits, although some income is derived from recreational activities, particularly at White Lake, and from both commercial and sports fishing activities.

The most important uses of the waters in this segment are to supply domestic water for the City of Wilmington and both domestic water and industrial water for Riegel Paper Corporation which also supplies domestic water to the Community Riegelwood. Raw water for Wilmington is taken at a point a short distance above Lock #2. After conventional treatment plus pre-chlorination, 5.5 m.g.d. of water are supplied to a population of 55,150. The raw water intake for the Riegel Paper Corporation is located about seven miles downstream from Lock #2 and about a mile above the point of discharge of effluent from the waste holding lagoon of this company. Since this water intake is in a segment of the river subject to lunar tidal action, the discharge of waste into the river during periods of low flows must be timed with this action to prevent pollution of the upstream water supply of this same company. After conventional treatment plus pre-chlorination, some 24 m.g.d. of water are supplied for both industrial and domestic purposes. As might be expected only a very small fraction is used for the latter purpose. A small amount of raw water also is used around the wood yard.

There are within this segment two recreational areas; namely, White Lake and Jones Lake. Both are in the Bladen Lakes State Park and are very popular. They have been described previously in this report.

While there is some water used for irrigation, such use is largely confined to farm ponds.

There is fresh water fishing in Cape Fear River above Lock #1, while both salt water and fresh water species are found in the tidal waters below this lock. The latter waters are very important spawning grounds for shad and are included in Cape Fear River commercial fishing waters below Lock #1 as designated by the Department of Conservation and Development Fisheries Commission. The future of commercial fishing in these waters is dependent upon both good conservation practices and the control of pollution. The following tributaries of Cape Fear are reported to be good fishing streams: Turnbull Creek (including Jones Lake), Hammond and Whites Creeks, Lucas Creek, Donahue Creek, Frenches Creek, Carver Creek, Natmore Creek and Waymans Creek.

This segment is also important from the viewpoint of navigation. As indicated previously, Lock #1 is located in this segment.

Little use is made of these waters for disposing of sewage and industrial waste. The two sources of pollution are discussed as follows:

Bladen Slaughterhouse is located on a swampy stream which is tributary to Browns Creek. A catch basin removes some of the solids and blood from the waste prior to its discharge to the swampy stream. There is some depression of the dissolved oxygen in Browns Creek below this waste and an increase in B.O.D.

Butler Market Abattoir is located on Browns Creek about 1.5 miles below the Bladen Slaughterhouse. The blood and washdown water pass through a catch basin before entering the creek. Since the stream has not recovered from the previous pollution, the general effect of this new waste is to retard the return of the stream to the condition found above the two wastes. There is a pronounced objectionable odor in the stream immediately below this plant and a brownish color to the water, both undoubtedly reflecting the impact of both wastes.

While both of these operations are small, a nuisance does exist and corrective measures are indicated at both plants.

SEGMENT IV. CAPE FEAR RIVER AND ITS TRIBUTARIES FROM RAW WATER SUPPLY
INTAKE AT RIEGEL PAPER CORPORATION TO UPSTREAM MOUTH OF TOOMERS
CREEK

Segment IV embraces an area which contains no large centers of population; Dunn, with a 1950 population of 6,318 is the largest, while Clinton is next largest with a 1950 population of 4,414. There is a large farm economy in this segment, with some industry in Dunn and Clinton and the most vital industry to the area, the Riegel Paper Corporation at Acme. There can be no doubt but that this industry has a very profound effect upon this segment and Segment V, the last segment of the Main River Drainage Area.

There are no public surface water supplies in this segment, but the Acme Fertilizer Company takes industrial cooling water from Livingston Creek. In 1954 the acid waste from the manufacturing process created a very bad corrosion problem at this plant.

Three recreational areas are located in this segment; namely, Williams Lake, Laurel Lake and Singletary Lake, the latter being in Bladen Lakes State Park.

While there is some water used for irrigation, it is largely from farm ponds and wells; however, there is a tendency to utilize more streams as water tables drop. Some streams are also used for the watering of farm stock.

There is considerable sports fishing in the area and like Segment III, the main stem of the river constitutes important commercial fishing waters. It is this segment which receives the most adverse effects due to the effluent from the Riegel Paper Corporation. Tributaries reported to be good fishing streams are: Black River (Little Black River at Angier), Stoney Creek, South River below Little Black River, Colly Creek, Black Lake, Little Coharie Creek, Coharie Creek, Six Mile Creek, Black River to mouth, Colvins Creek, and Moores Creek below Oak Creek. As noted previously both Black River and its major tributary, South River, drain extensive swamps and very logically fall in the category of swamp water streams. It should be noted that this segment terminates at the beginning of the tidal salt waters.

Fear

A major use of Cape Fear River in this segment is for navigation between Wilmington and Fayetteville; however, its greatest value is for the propagation of fish and to supply water to the Riegel Paper Corporation for both processing purposes and for waste disposal. A large pulp and paper processing industry cannot exist unless there is a large supply of pulp wood within reasonable hauling distance. Neither can it exist unless there is a large supply of processing water, which can be satisfactorily treated at reasonable cost, and unless sufficient dilution water is available to prevent unreasonable costs for waste

treatment. In this case, a large supply of pulp wood is at hand, water which can be treated at reasonable cost for processing is available, but dilution water for the waste is deficient in extended dry seasons without a considerable degree of treatment of the waste. There are a total of 13 polluters in the segment. The total pollution load before treatment has a P.E. of 404,168 and after treatment a P.E. of 350,612, which represents a reduction of pollution entering the receiving streams of but 13%. These sources of pollution are discussed as follows:

Riegel Paper Corporation, Carolina Division, Acme - This company processes highly bleached kraft pulp from pine and gum wood as well as smaller quantities of unbleached pulp produced by the neutral sulfite semi-chemical method. During the stream studies in 1955 and 1956, the company produced from 300-330 tons of pulp per day. By April, 1957, the production of pulp had reached 450 tons per day and just recently a large paper making machine was added to the processing facilities. It is thus evident that the analytical data collected during the stream study period do not reflect present conditions.

The sewage from some 500 employees is discharged to a large holding basin or lagoon together with all of the industrial waste prior to entering the river. While the population is not large, there is, nevertheless, an increase in coliform bacteria as compared to upstream determinations. In April and May 1957, a special study was made of the combined sewage and industrial waste which had an average flow of 24.2 m.g.d. This study showed that the P.E. before treatment was 380,000, while after treatment it was 330,000 which represents but a 13% reduction of pollution through the lagoon. While this company is to be commended for many excellent recovery practices, the fact remains that the stream loading is the largest in the Cape Fear River Basin and the 1955 and 1956 data indicated objectionable stream conditions even prior to the expansion program.

The summer of 1956 was a more normal period than the hurricane season of 1955, except for a few short periods of high runoff. The analytical data show that the average dissolved oxygen of the first sag point, Sampling Station 276 six miles below the outfall at river mile 51.5, was 2.2 ppm, while at the secondary sag point, Sampling Station 279, twelve miles below the outfall at river mile 45.5, it was only 1.5 ppm. It is believed that the secondary sag is due to tidal action in normal times. It should be noted that during both years, the dissolved oxygen was reduced to as little as 0.2 ppm. Thousands of dead fish were observed in the river for some distance below the outfall on one occasion in 1955. While this mishap was alleged to have been caused by an inplant spill, it points up the fact that the present lagoon is inadequate for protecting the river under all conditions. Tests do show, however, that when the holding basin or lagoon is used to hold back part of the daily waste as it is produced, the facility acts as an excellent equalization basin for mixing the various wastes.

Review of the analytical data for the year 1956 indicates that the Riegel Paper Corporation waste disposal problem cannot be separated from the problem confronting the City of Wilmington and the industries in that area. The total P.E. reaching the streams in the Wilmington area, including the Cape Fear River is 49,700, of which the City is responsible for about 90%. The data shows that in normal times recovery begins at Sampling Station 279 below the Riegel waste and continues to improve to river mile 28.0 where Northeast Cape Fear River joins the main stem. The dissolved oxygen at river mile 28.5 (Sampling Station 321)

averaged 3.3 ppm. The pollution in Northeast Cape Fear River from the Wilmington Area plus the pollution reaching the main stem from this City caused recovery to be retarded to Sampling Station 258 at river mile 24.3. (Below all pollution from Wilmington Area.) A maximum average dissolved oxygen of 3.7 ppm was observed at this point, only to be reduced to 3.2 ppm by a combination of main stem pollution and upstream pollution from Brunswick River. There followed a pronounced sag for about one mile, whence recovery continued at a rapid rate to Sampling Station 383 at river mile 11.1, where there was a leveling off of dissolved oxygen at about 6.0 ppm to the Atlantic Ocean.

There are two exceptions to this more or less normal behavior pattern under conditions of high flows as follows: Condition 1, with most of the water coming from Black and Northeast Cape Fear Rivers, both swamp water streams; and Condition 2, with most of the water coming down the main stem from above Lock #1.

River	Condition 1 8/30/55			Condition 2 7/23 and 24/56		
	Sta. 270	Sta. 312	Sta. 354	Sta. 270	Sta. 314	Sta. 354
	<u>C.F.</u>	<u>Black</u>	<u>N.E.C.F.</u>	<u>C.F.</u>	<u>Black</u>	<u>N.E.C.F.</u>
Flow cfs.	5,100	6,600	9,300	10,000	1,800	1,200
pH	6.1	5.1	5.9	6.6	5.7	7.0
D.O. ppm	3.9	2.0	1.3	5.5	3.7	3.5

River	Sta. 358	Sta. 358
	<u>C.F.</u>	<u>C.F.</u>
pH	5.8	6.9
D.O. ppm	1.3	2.8

River	Sta. 360 (8/26/55)	Sta. 360
	<u>C.F.</u>	<u>C.F.</u>
pH	6.0	7.2
D.O. ppm	2.2	4.9

The intrusion of swamp water is shown under Condition 1. While not enough samples were collected above Sampling Station 321 at river mile 28.5 to show the pattern, it is believed to be somewhat similar to the normal one but with much lower values for dissolved oxygen. Below Sampling Station 321 the minimum dissolved oxygen averaged 1.7 ppm at Sampling Station 358 above Brunswick River with as little as 1.3 ppm as the lowest value. The dissolved oxygen at Sampling Station 360 below Brunswick River was 2.2 ppm. At Sampling Station 388 at river mile 1.3, the average dissolved oxygen was only 4.6 ppm during the high flow period. The pH determinations at the downstream stations show the effects of the intrusion of swamp water.

An extensive sampling program under Condition 2 showed that the Riegel waste did not produce an oxygen sag as such until mixed with the pollution from Wilmington. In this case the dissolved oxygen was reduced gradually from 5.5 ppm at Sampling Station 270 (river mile 58.6) above the Riegel waste to 4.0 ppm at Sampling Station 321. The sag occurred at Sampling Station 358 just above the lower mouth of Brunswick River, probably because of the high tide, where the dissolved oxygen was only 2.8 ppm. The dissolved oxygen value at Sampling Station 360 was 4.9 ppm.

It is obvious from this presentation that the intrusion of swamp water the main stem has an adverse effect but it is very obvious that the Riegel Corporation will have to take additional action, while the City of Wilmington and the industries in that area will also have to take corrective action, in some instances, if this important fishery is to be preserved.

Acme Fertilizer Company, Acme, discharges cooling water from the sulphuric acid plant and scrubbing tower water from the fertilizer plant into Livingston Creek at a point about $3\frac{1}{2}$ miles above its mouth. Tests made in 1954 showed that all of these wastes were very acid, although in normal practice the cooling water in most plants is usually alkaline. This unusual condition was due to the action carrying the waste water upstream to the intake on Livingston Creek. The presence of over 2 ppm of fluoride in Cape Fear River 2.0 miles below Livingston Creek on one occasion and 2.2 ppm in the creek on another occasion suggests means of reducing the concentrations of this substance. Tests in 1954 showed that the creek water was very acid until mixed with Cape Fear River water (due to upstream by tidal action) at a point some $1\frac{3}{4}$ miles above the mouth of the creek. Similar conditions were noted in 1955. It would appear, therefore, that the chief detrimental effect of these acid wastes is upon the company's own water supply, unless this matter has been corrected.

Town of Clinton has a sewage collection system that discharges untreated sewage and industrial waste into Mill Creek at its confluence with Dollar Branch. A large quantity of industrial waste is received from the Lundy Packing Company. The combined flow is 443,000 g.p.d., while the average B.O.D. of the combined waste amounts to 290 ppm. The system serves 3,000 people. The P.E. was 6.1. Special samples of the combined waste containing blood had a B.O.D. in excess of 1,900 ppm. The stream below the outfall is in extremely foul shape with a B.O.D. exceeding 120 ppm and coliform bacteria in excess of 93,000,000 per 100 ml. Coliform bacteria are still numerous in Great Coharie Creek 2.4 miles below the outfall in Mill Creek. The dissolved oxygen in the water of this creek is reduced to as little as 1.7 ppm and it is little wonder that a fish kill was reported in 1957. An abnormal B.O.D. and large numbers of coliform bacteria at a collection station above this outfall indicate private outfalls or storm sewers are being used to discharge sewage or industrial waste directly to the stream. A preliminary study of the overall waste problem was made by the City several years ago. The City should immediately bring the plans proposed at that time up-to-date and construct adequate treatment works in order to remove this heavy pollution load from the stream.

Griffin Poultry near Clinton discharges treated waste into Great Coharie Creek at the mouth of Mill Creek. This waste is collected in a septic tank, from which it drains to a sand filter and then to the creek. The offal and solid wastes are burned. This waste is in such small quantity that it cannot be seen in the stream. Continued proper operation of this system should be adequate for its present needs.

Town of Salemburg has a sewage system which serves both Pineland College and Edwards Military Institute. Untreated sewage is discharged into Little Coharie Creek above the mouth of Rye Swamp. A population of 420 is normally served, although this is variable. Due to the rather large flow in this creek the net effect of the untreated sewage is to increase the numbers of coliform bacteria in the stream water and corrective measures are indicated to protect downstream users. In developing plans for treatment facilities for Salemburg the engineer should consider the large fluctuation of people served during the school term and during the summer. While the summer flow in the system will

considerably lower, the receiving stream will have a smaller flow.

Town of Roseboro has two sewage treatment plants, both of which are septic tanks without secondary treatment. The larger of these plants serves a population of 640 and discharges into Little Coharie Creek. The other plant serves a population of 500 and discharges into Mill Creek which flows into South River. Mill Creek is a very small stream and in dry weather the flow from the septic tank constitutes the flow in the creek. The stream bed has sludge deposits, while the water has a distinctive sewage odor, and a gray color. The dissolved oxygen in the stream below the outfall is reduced to zero on occasion, while coliform bacteria are found in numbers as high as 93,000 per 100 ml. Obviously, corrective measures are necessary. While there is little visual evidence of sewage effluent in Little Coharie Creek, below the larger of the two septic tanks because of the large stream flow, coliform bacteria are found in large numbers and indicate corrective action. There is no industrial waste. The town should give consideration to the treatment of the sewage in one central plant, located where there is a receiving stream with ample dilution water.

Town of Warsaw has an Imhoff tank with no secondary treatment that serves a population of 1,600 people. There is no industrial waste. The dissolved oxygen in the stream below the outfall was reduced to 2.1 ppm on occasion, while coliform bacteria averaged 3,000,000 per 100 ml. There is still a deficiency of dissolved oxygen 2.3 miles below this plant and large numbers of coliform bacteria. Stewarts Creek, into which the effluent flows, is very swampy and slow-moving, and where the plant effluent enters the stream it creates a local nuisance. Corrective action is indicated.

Town of Magnolia has a sewage treatment plant that serves 120 people. There is no industrial waste. The treatment plant is an Imhoff tank that drains into the headwaters of Millers Creek. The stream is very small at the plant and at times the effluent is the only flow in dry weather. This causes sludge banks in the stream and growth of weeds. The stream contains no dissolved oxygen at times, while coliform bacteria are as high as 24,000,000 per 100 ml. Further down, the stream has picked up some dissolved oxygen but still contains large numbers of coliform bacteria. Millers Creek is also very swampy and sluggish, causing the sewage to stand and become septic, thereby creating a local problem along the stream. Corrective action is necessary.

Town of Angier has a sewage treatment plant that consists of an Imhoff tank. Although the plant was designed to serve only 1,350 people, it now serves a population of 1,450. There is no industrial waste. The effluent discharges into a very swampy section of the headwaters of Black River (locally known as Little Black River) which has a very low flow in dry seasons. The stream below the outfall has a brownish color with some visible sludge banks and green algae. The dissolved oxygen in the stream is reduced to as little as 0.8 ppm, while coliform bacteria are found in numbers as high as 930,000 per 100 ml. Further downstream, as it overflows a fish pond dam, the dissolved oxygen has only picked up another 0.4 ppm and the B.O.D. is still high. A control station above the outfall indicates the stream is receiving pollution from other parts of town. The present treatment facility is in poor operating condition and was outgrown long ago. In order to fully protect this stream, the plant should be completely renovated, or replaced.

The City of Dunn has two sewage treatment plants. One plant consists of a bar screen, grit chamber, and an Imhoff tank, that discharges into a very swampy section of "Little Black River". The area around the outfall has a very heavy

undergrowth with a very distinctive sewage odor and a heavy layer of black, sludge-like muck. The dissolved oxygen in the stream below the outfall is reduced to as little as 2.3 ppm, while coliform bacteria are found in numbers as high as 43,000 per 100 ml. This plant serves a population of 3,500 people and industrial waste from Colonial Frozen Foods, Inc., with a P.E. of 216. It appears to be overloaded and should be relieved of some of its pollution load. The sewer plant consists of a bar rack, grit chamber, a mechanically-operated primary settling tank and a separate sludge digester. The effluent is discharged into a swampy area at the mouth of a small tributary to Mingo Swamp, called Stoney Run. The effluent has a heavy turbidity and the banks below the outfall contain a heavy growth of algae and sludge deposits. Approximately one mile downstream, the water is still deficient in dissolved oxygen and contains large numbers of coliform bacteria. This plant was built with the intention of later adding secondary treatment. The land is available at the present plant site and it is now time for additional improvements. If practicable all the sewage should be discharged to the plant for treatment.

Wellons Candy Company near Dunn discharges industrial waste into the headwaters of Stoney Run and into the backwaters of Hannas Pond which is a fishing lake. This waste, which contains large quantities of sugar, has a B.O.D. of 6,600 ppm and is very alkaline, having a high pH of 9.0. The waste is equivalent to the sewage from 5,600 people. Some of this B.O.D. is still present in the stream approximately one-half a mile after it has passed over the dam at Hannas Pond and on occasion the dissolved oxygen is reduced to as little as 1.5 ppm when the stream flow is very small. There is a foamy coating along the banks of the pond at the outfall. While there have been no reports of fish kills in this pond, this waste is a potential hazard to fish life.

M. F. Hodge Abattoir near Dunn discharges industrial waste into Stoney Run below the Wellons Candy Company outfall. At the time of the survey the outfall appeared to be clean and had no visual effect on the receiving stream.

Shortly after the sampling program was begun in the Angier and Dunn areas heavy rains caused exceptionally high stream flows. The averaged analyses, therefore, do not reflect the conditions when the stream flow is either very small or nil.

Carolina Power & Light Company, Sutton Steam Plant, near Wilmington, discharges 181.4 m.g.d. of cooling water into Cape Fear River just below mile board seven (river mile 34.5) and above Sampling Station 319 at river mile 33.3. This water has little effect on the river, except to raise the temperature of the water. In this connection, it was noted that the incoming water had an average temperature of 28°C and the outgoing water an average temperature of 35°C, while the water at Sampling Station 319 was back to normal. The ashes are dumped into a swamp north of the plant that is drained by Catfish Creek. To the date of the report, none of the ashes have entered the river in large enough quantities to be visible.

Summary Discussion of Pollution in Segment IV

While there are a number of localized sewage and/or waste disposal problems, the most pertinent are the discharge of untreated sewage and/or industrial waste from the Town of Salemburg and the Town of Clinton. It appears inevitable that the discharge of untreated industrial waste by Wellons Candy Company will in time affect fish life in Hannas Pond. A problem of great magnitude is the disposal of industrial waste at the Riegel Paper Corporation plant. Study of the available

data shows that the solution of this problem cannot be resolved satisfactorily until the City of Wilmington and the industries in that area take appropriate action.

All polluters in this segment are urged to take appropriate action, where indicated, as soon as possible.

SEGMENT V. CAPE FEAR RIVER AND ITS TRIBUTARIES FROM UPPER MOUTH OF TOOMERS CREEK TO ATLANTIC OCEAN

This segment includes Northeast Cape Fear River, the Coastal Areas and the City of Wilmington with a population of 45,043, the second largest center of population in the Main River Drainage Area. Wrightsville Beach with a summer population of 30,000 is the largest of the coastal resorts which add so much to the economy of the Drainage Area. The inland towns, while small in comparison with these large centers of population, are important centers in large measure in reference to the sizeable farm economy. The farm economy includes crops, hogs, cattle, poultry and a large acreage of woodlands which provides both lumber and pulp wood. The towns of Mount Olive, Faison, and Wallace, and the City of Wilmington all have important industries, while the Town of Southport is a center of commercial fishing activity. The City of Wilmington with its excellent harbor facilities not only adds to the economy of the immediate area but to the economy of inland areas as well. As mentioned previously, the Riegel Paper Corporation plays an important part in the economy of this segment as well as in Segment IV. Shellfishing is an important industry in the lower portion of the segment.

The City of Wilmington maintains an emergency, raw water supply intake on Toomers Creek, while industrial water is taken from Cape Fear River by Armour Fertilizer Company and Virginia-Carolina Chemical Corporation at Navassa. Swift and Company at Wilmington derives industrial water from Northeast Cape Fear River.

Three inland recreational areas are located in this segment; namely, Lake Tut, Millias Pond, and Pretty Pond; while ten recreational areas are located on the Atlantic Ocean at: Surf City, New Topsail Beach, Wrightsville Beach, Carolina Beach, Hamby Beach, Wilmington Beach, Kure Beach, Fort Caswell, Yapon Village and Long Beach. These facilities have been discussed in detail in a prior section of the report.

The ocean waters, as well as many of the inland waters, are excellent for sports fishing. The inland waters of prime importance in this regard are: Goshen Swamp below Mahunga Creek, Grove Creek, Northeast Cape Fear River from Wayne-Duplin County line to mouth, Elder Branch, Maxwell Creek below N. C. Highway #11, Stocking Head Creek, Rock Fish Creek, Little Rock Fish Creek to dam at N. C. Highway #41, Washington Creek, Lewis Creek, Dero Creek, Holly Shelf Creek and its tributaries, Ashes Creek, Fishing Creek, Watermellon Run, Peggy Island Creek, Jumping Run, Cypress Creek, Gregory Creek, Lillington Creek, Graveyard Creek, Green Oak Creek, McIntyre Creek, Hawkins Creek, Honey Creek, Old Creek, Turkey Creek, Long Creek from Long Branch to mouth, and Cape Fear River. It is to be noted that Northeast Cape Fear River, below the mouth of Ness Creek north of Wilmington, is a tidal salt water stream. Commercial fishing waters, as designated by the Department of Conservation and Development Fisheries Commission, are: Cape Fear River below Kings Bluff Locks (Lock #1), Northeast Cape Fear River below State Highway No. 53 (near Burgaw), Brunswick River, Middle Sound and Myrtle Sound. These commercial fishing waters have been previously described.

Shellfish are taken for commercial purposes from the Intracoastal Waterway and adjacent waters and at the mouth of the Cape Fear River, except from the restricted areas noted previously. If there is a demand for same, it appears possible to secure protection of small portions of Elizabeth River and Dutchman's Creek near Southport.

While a number of streams are used for irrigation, farm ponds are so used in most cases; however, there appears to be a trend to greater use of streams for this purpose. A number of streams also are used for the watering of stock.

Many waters of this segment are used for the ultimate disposal of sewage and industrial waste. The segment contains 31 sources of pollution with a total P.E. of 132,830 before treatment and 122,000 after treatment, which represents a reduction of but 8% of pollution reaching the receiving streams. The various sources of pollution are described as follows:

Armour Fertilizer Company, Navassa, manufactures superphosphate from large pebble phosphate and sulphuric acid which is prepared by the Chamber process. Sewage from 160 employees, cooling water from the sulphuric acid plant, and scrubber tower water are discharged into Cape Fear River without treatment.

Virginia-Carolina Chemical Corporation, Navassa, manufactures superphosphate in a manner similar to that of the above company, except in this case Contact process is used in preparing sulphuric acid. Sewage from 140 employees, cooling water, and scrubber tower ^{water} also are discharged into Cape Fear River without treatment.

The discharge of untreated sewage into the river at both plants is a nuisance which may readily be abated by discharging same to subsurface disposal works. There is no evidence of the industrial waste after admixture with the river water and the chief effect is to increase the sulphates in the river water from about 20 to 50 ppm. The fluorides are usually less than 0.1 ppm due to large amount of dilution water available in the river.

Town of Mount Olive at the time of the stream studies discharged sewage and a small amount of industrial waste to an overloaded circular Imhoff tank from which effluent was discharged into the headwaters of Northeast Cape Fear River. The influent had a P.E. of 1,542 which was reduced but little, if any, as the sewage passed through the plant. The sewage as it leaves the tank has a strong odor, a dark gray color, and is very turbid. This sewage and the pollution in Barlow Branch from Mount Olive Pickle Company result in heavy sludge banks and rank algae growths along the banks of the stream for some distance downstream below the outfall. The combination of sewage and industrial waste reduces the dissolved oxygen to zero, except under conditions of extremely high flow, and has been known to cause fish kills which have been the subject of much complaint. The water had an average B.O.D. of 120 ppm below the outfall during the stream studies and contained large numbers of coliform bacteria. In recognition of their responsibilities in this matter, the Town Officials secured approval of both the State Board of Health and the State Stream Sanitation Committee of plans for a sewage treatment plant designed to solve the Town's share of the overall pollution problem. The plant, with a capacity of 637,500 g.p.d., is expected to be in operation in the near future. When completed and under proper operation the plant should be adequate for its present and future needs for some time to come. The Town is to be highly commended for taking this most important action.

Mount Olive Pickle Company, Mount Olive, discharges an average of 89,000 pounds of industrial waste into Barlow Branch at a point above its junction with Northeast Cape Fear River and just above the effluent from the Town's old sewage treatment plant. The pickle waste from this plant varies widely in both quantity and in character. It contains a high chloride content and is highly organic and acid. The dissolved oxygen in the stream for some distance below the outfall was reduced to zero on occasion, while the water had an average B.O.D. of 460 ppm and an average coliform bacteria content of 360,000 per 100 ml. The stream was very turbid, had a sickening odor, a dark green color and was very heavy with floating solids. This waste combined with the effluent from the Town's sewage treatment plant has created a very critical situation in Northeast Cape Fear River for many miles downstream which has been indicated previously. This company should follow the leadership of the Town and take prompt action to abate its share of the pollution.

Town of Faison has a sewerage system that serves a population of 636 and receives industrial waste from Cates Pickle Company with a P.E. of 1,045. The town has a treatment plant that consists of a bar screen and an Imhoff tank but this plant has been abandoned for several years as the highly acid waste from the pickle company has rusted out the pipes and rendered the plant useless. The stream is in a swampy area and at the point of effluent discharge is very slow-moving and has but a small flow. A sewage gray color can be observed in the water in the vicinity of the outfall. The stream studies in this area were conducted during a period of high stream flows and the analyses, accordingly, do not reflect critical conditions. In order for the Town to properly treat its domestic sewage it will be necessary to replace this plant and to remove the pickle company's waste from the system or to require that this waste be pretreated before accepted into the system.

Town of Rose Hill has a sewage treatment plant that receives only domestic sewage from 875 persons. The treatment plant consists of a bar screen and an Imhoff tank. The effluent is discharged into a small canal that drains to Island Creek. Approximately 300 feet downstream from the outfall, the dissolved oxygen in the stream is reduced to zero. The stream water has an average B.O.D. of 42 ppm and an average coliform bacteria content of 4,700,000 per 100 ml. Further downstream the dissolved oxygen has increased but the coliform bacteria still remain high. Obviously, corrective action is necessary.

Bonds Abattoir at Wallace has a blood collection system for the slaughterhouse that only partially collects the blood. Most of it overflows into the stream or remains on the banks where it dries. The uncollected blood and the washdown water are discharged into a dry ditch approximately one-half mile from Rock Fish Creek. The stream bed is loaded with black sludge deposits and dried blood causing a very putrid odor. The dissolved oxygen in the stream is reduced to zero, while the B.O.D. is as strong as that of sewage. This waste increases the numbers of coliform bacteria in Rock Fish Creek. Corrective action is required to prevent a local nuisance and to protect the creek.

Town of Wallace has two primary sewage disposal plants. The two serve a population of 1,500 and, in addition, one receives industrial waste from an ice cream plant. Both plants are septic tanks without secondary treatment. The southwest plant discharges into Rock Fish Creek just upstream from the railroad bridge above U. S. Highway 117. During periods of heavy rainfall the outfall line tends to clog up and causes the sewage to overflow into the swamps and the river. The dissolved oxygen in Rock Fish Creek below the outfall is reduced to as little as 3.0 ppm on occasion while coliform bacteria are found in numbers as

high as 150,000 per 100 ml. The northeast plant discharges into Little Rock Fish Creek below N. C. Highway 41 bridge. The plant is located in a swampy area where there can be little fall in the effluent line. This causes the sewage to back up into the tank and flood the swamp with sludge deposits and raw sewage.

The textile plant of J. P. Stevens & Company in Wallace is located downstream from the northeast plant. The effluent from the industrial waste lagoon and the effluent from the nearby sewage treatment plant, which treats the domestic sewage of this company, are also discharged to Little Rock Fish Creek. It is not practicable to separate the effects of the several wastes upon the water of Little Rock Fish Creek which has but little summer flow as the rule. The net effects of the several wastes are to reduce the dissolved oxygen to zero on occasion in the stream and increase the B.O.D. and the numbers of coliform bacteria. The combination of these wastes, and possibly the industrial waste from Wallace Pickle Company located on a small tributary upstream from Wallace, has resulted in fish kills in Rock Fish Creek. In addition, numerous complaints have been received by this office as to odors from Little Rock Fish Creek.

It is very obvious that the present sewage treatment plants of the Town are inadequate. Corrective action is necessary at both plants. Consideration should be given toward treating all of the sewage in a centrally located plant. If practicable, consideration also should be given toward treating all of the industrial waste in a common plant.

Wallace Pickle Company near Wallace discharges untreated industrial waste into a ditch that flows through the residential section of Wallace to Little Rock Fish Creek below the effluent from the northeast plant and upstream from the effluent from J. P. Stevens & Company industrial waste lagoon. This ditch enters the storm sewer system a short distance from Little Rock Fish Creek. While the waste is small in volume, it is highly organic and usually acid. One sample collected in the ditch below this waste had a high chloride content, a high B.O.D., and contained large numbers of coliform bacteria. The present method of disposing of this waste constitutes a nuisance and should be corrected. Under certain conditions, it undoubtedly affects adversely the water in Little Rock Fish Creek.

J. P. Stevens & Company, Carter Fabrics Division, Wallace, discharges an average of 198,000 g.p.d. of textile mill waste into a lagoon for purposes of neutralization, mixture, and treatment. The estimated P.E. before treatment is 6,200, while after treatment the theoretical P.E. is 4,300. In this connection, studies have shown that the theoretical reduction in pollution is not reached at all times in actual practice. Slight traces of toxic elements such as cyanides, copper, chromium, and phenols were found in the effluent from the lagoon. The effects of the lagoon effluent when combined with the other wastes in the area have already been discussed. As noted previously, it would be desirable for all sewage and waste to be treated in a common plant.

Town of Burgaw has a sewage treatment plant that receives only domestic sewage from a population of 1,000. The plant consists of primary settling with separate sludge digestion. The effluent discharges into a small ditch called Osgood Canal that drains into Burgaw Creek. The water in this effluent ditch has a gray color and sewage odor. Heavy green algae grows along its banks. Further downstream at U.S. Highway 117 By-pass the effluent has flowed into Burgaw Creek. The movement here is very slow and the banks of the stream and the stream bed have become fouled with sludge and a thick growth of algae. The dissolved oxygen in the water at this point is reduced to zero on occasion, with

coliform bacteria are found in numbers as high as 15,000,000 per 100 ml. Burgaw Creek continues to have a deficiency of dissolved oxygen for some distance downstream. The plant and its grounds appear to be in poor condition. Obviously corrective measures are necessary to protect the receiving stream.

Wilmington Packing Company near Castle Hayne discharges waste with an estimated P.E. of 4,818, from a packing house into Prince George Creek. An attempt is made to collect blood from the slaughterhouse but some of it still goes to the stream. The plant effluent is discharged into a very swampy and slow moving section of the stream. The stream below the outfall occasionally has a blood red color and at times has a scum of coagulated or dried blood. The muck along the bank is black and oily and has a rotten meat odor. This waste reduces the dissolved oxygen in the stream and increases the numbers of coliform bacteria. Corrective action is indicated.

Rooks Packing Company near Castle Hayne discharges waste from a complete meat packing process into a small ditch that flows through a cultivated field to Rileys Creek. The waste has a P.E. of 618. The plant is clean and the ditch in the vicinity of the plant appears to be in fair condition. Rileys Creek and Long Creek, to which Rileys Creek is tributary, flow through a very swampy and almost uninhabited area. The waste, therefore, presents only a local nuisance at the packing plant.

Pender Packing Company near Castle Hayne discharges waste from a sausage manufacturing process into a swamp next to the plant. The waste has a P.E. of 765. The odor from the swamp is very strong and septic and can be detected some distance away. The blood recovery pit is not operating satisfactorily and blood and sludge have covered the muck in the swamp. The swamp drains into a ditch that flows into Morgans Creek. Morgans Creek flows through a very swampy section of Pender County. It appears that this waste is a local nuisance only.

Swift & Company, Wilmington, manufactures superphosphate fertilizer from land pebble phosphate and sulphuric acid which is prepared at the plant site. The sewage from 110 employees, cooling water from the sulphuric acid plant, and scrubber tower water are discharged into Northeast Cape Fear River without treatment. The combined industrial wastes are acid in character and contain fluorides. They do not appear to materially change the pH of the river water below the plant because of the large amount of dilution. The sewage from the employees should be treated by subsurface disposal methods.

Wanet's Sausage Company, Wilmington, operates a complete packing plant on Smiths Creek. The wastes from the killing room and packing operations are passed through a grease trap prior to discharge to the creek. The untreated wastes have a P.E. of 4,000, while the P.E. of the treated wastes is 3,200. This represents but a 20% reduction in the pollution reaching Smiths Creek. The creek below the outfall is colored by blood and contains an objectionable odor. Drainage also reaches the creek from the stock pens.

Timme Corporation, Wilmington, is a textile enterprise located on Smiths Creek. Spent dye from the finishing process is discharged into two lagoons. These lagoons are used alternately in order to obtain a maximum retention time. After flowing through the lagoons, the wastes are discharged into Smiths Creek. The waste in the channel carrying the effluent to the creek had a purplish color and a strong chemical odor. The mill discharges an estimated 51,000 g.p.d. of waste to the lagoons. The P.E. is in excess of 1,400. It is doubtful that much

reduction in B.O.D. is obtained by this process as experience at similar installations shows little reduction in pollution. Such lagoons, however, do not secure good mixture of the different wastes. The color is dissipated in the swampy waters of Smiths Creek by the time it reaches U. S. Highway 117 and Bridge.

New Hanover Prison Camp, Wilmington, is presently located near the Tim Corporation between the U. S. Highway bridge and the Atlantic Coastline Railroad bridge. The population of about 100 is served by a new septic tank and sand filter sewage disposal system from which effluent is discharged to Smiths Creek. During the period of the stream studies in this area, untreated sewage was discharged from the old camp into a small tributary of Smiths Creek east of the railroad tracks. The small tributary was badly polluted at that time. The State Prison Department is to be highly commended for constructing the sewage treatment plant.

A considerable portion of the untreated sewage from the City of Wilmington is discharged into Smiths Creek through a 30-inch outfall at a point between the railroad bridge and the U. S. Highway bridge. It is not practicable to separate the effects of sewage and/or waste discharged from the City outfalls and the outfalls from Wanet Sausage Company, Timme Corporation and the New Hanover Prison Camp upon the water of Smiths Creek. A study of the available analyses shows that Smiths Creek is adversely affected by the combination of these wastes. The dissolved oxygen in the creek water was reduced to as low as 0.3 ppm during the high flows in 1955, and to as little as 1.5 ppm during the more normal season of 1956. The B.O.D. was increased and large numbers of coliform bacteria were found in both years. In addition, the analyses show that these wastes adversely affect the water in Northeast Cape Fear River. The pollution in Smiths Creek is of such magnitude as to require correction. In this connection, the sewage treatment plant at the New Hanover Prison Camp is considered to be satisfactory.

City of Wilmington has a sewerage system serving a population of 44,700 and small establishments such as laundries and bottling companies. The sewage and waste do not receive any type of treatment prior to discharge through the following 16 outfalls to Smiths Creek, Northeast Cape Fear River and Cape Fear River:

Smiths Creek - 30" at end of Twelfth Street
 Northeast Cape Fear River - 24" at end of Cowan Street
 Cape Fear River - 10" at end of Redcross Street
 8" at end of Walnut Street
 8" at end of Grace Street
 8" at end of Chestnut Street
 8" at end of Princess Street
 2-8" at end of Market Street
 10" at end of Castle Street
 8" at end of Queen Street
 8" & 12" at end of Wooster Street
 12" at end of Dawson Street
 18" from Burnett Boulevard to Mouth of Greenfield Creek
 24" at end of Central Boulevard through property of
 North Carolina Ports Authority

The above outfalls embrace a water front along the creek and the two rivers of about 7 miles.



CITY OF
WILMINGTON

The effects of the sewage from the 30" outfall upon the waters in Smith Creek and Northeast Cape Fear River have already been described. The sewage from the 24" outfall at the end of Cowan Street depressed the dissolved oxygen at Sampling Station 354, $\frac{1}{2}$ mile above the mouth of Northeast Cape Fear River, to minimum values of 1.3 ppm during the high flows in 1955 and 3.0 ppm during the more normal flows in 1956. Coliform bacteria were found in numbers as high as 930,000 per 100 ml. in 1956, with a maximum of but 9,000 per 100 ml. during the high river flows of 1955.

As might be expected, the high concentration of sewage between the mouth of Northeast Cape Fear River and the docks of the North Carolina Ports Authority showed adverse effects even with the benefit of the larger flows in Cape Fear River. The effects of this sewage and the upstream pollution from the Riegel Corporation upon dissolved oxygen values in Cape Fear River have been discussed previously in this report. Corrective action by both the City and the Corporation is necessary if fishing in these commercial waters is to be preserved.

It should be noted that the discharges of untreated sewage in the City area result in scums and unsightly floating solids along the water front. In addition, large numbers of coliform bacteria are found in the water below the various outfalls. In the general vicinity of Market Street such bacteria are found in numbers as high as 930,000 per 100 ml. While there is a very marked decrease in numbers of coliform bacteria in the river in the vicinity of Snows Cut at river mile 14.5, this pollution, when combined with the pollution from Carolina and Re Beaches and the Southport Area, is such as to threaten the safety of valuable shellfish areas near the mouth of the river, particularly under conditions of high river flows. This information emphasizes the necessity of corrective action by the City of Wilmington and, of course, by the downstream polluters.

The sources of pollution in the Wilmington area are shown on a map on page 1 of the report.

Town of Holly Ridge has a sewage treatment plant that consists of a septic tank and a sand filter. The plant receives only domestic sewage from a population of 1,084. The septic tank has recently been rebuilt but the sewage is not properly distributed over the sand filter. King Creek, accordingly, shows adverse effects from this poor operating practice. The stream below the outfall has a dirty gray color and a slight sewage odor and contains large numbers of coliform bacteria. Larger numbers of such bacteria are found in the water above the sewage plant outfall than would normally be expected. This may indicate the presence of sewage from local household disposal systems. Proper operation of the sand filters would improve this situation but a thorough study of the treatment plant design should also be made and corrective action should be taken as may be indicated.

Pender Farms Piggery near Holly Ridge is located on a tributary to Virginia Creek. An area of some 20 acres of land contains 12 pens which are provided with wooden feeding platforms. Cooked garbage is fed to an average of 2,500 pigs, although the maximum number of pigs may reach 5,000. Surface drainage from the pen area enters the aforementioned tributary and ultimately Virginia Creek where the State Board of Health has found coliform bacteria in considerable numbers. In view of the extreme difficulty in controlling this type of pollution, the waters of Virginia Creek do not provide a safe area for the removal of shellfish for human consumption.

Town of Wrightsville Beach has a primary sewage treatment plant that includes separate sludge digestion and inadequate chlorination facilities. The plant serves a winter population of only 982 but in the summer it serves a population of 27,000, about four times the design capacity of the treatment plant. The outfall discharges the partially treated sewage into Moore Inlet where it is subject to tidal action. The ebbing tide carries it into the ocean while the flooding tide carries it to inland waters. The only visible evidence of this effluent is a dark color around the outfall and a slight layer of slime on the rocks next to the plant. Moore Inlet is subject to heavy tides and constantly shifting sand. The hurricanes and heavy winds of 1955 caused the mouth of the Inlet to become very shallow. Special care should be taken that the Inlet does not close and cause the effluent to further pollute inland waters. The effect of this partially treated sewage upon bathing beaches has been discussed previously in this report. Obviously, corrective action is required to protect ocean beaches and reduce the pollution of inland waters.

Town of Carolina Beach has a sewerage system that serves a population of 1,060 in the winter and 10,000 in the summer. The untreated sewage is discharged through an outfall to Cape Fear River which is exposed at times of extreme low tide. The outfall extends into the river for a distance sufficient to prevent sewage solids from reaching the shore under normal conditions. The most adverse effect of this untreated sewage is to increase the numbers of coliform bacteria in the river which previously had shown a large decrease in numbers below upstream pollution. Corrective action is indicated by the Town of Carolina Beach.

Town of Kure Beach has a sewage collection system that serves a population of 280 in the winter and 2,000 during the summer vacation period. The outfall is run to the riverside and then 450 feet into the river. The end of the outfall is under water at all times. As in the case of Carolina Beach, the main effect of the untreated sewage is to increase the numbers of coliform bacteria in the river. Land has been purchased by Kure Beach to build a treatment plant but no plans have been made for actual construction of this plant. The Town is urged to proceed with the proposed plans as rapidly as possible.

Fort Fisher Air Force Station is a small permanent installation that discharges untreated sewage and storm drainage into Cape Fear River just downstream from the Kure Beach outfall. While no visible evidence of the sewage can be seen in the river, it, nevertheless, adds to the overall pollution and corrective measures are indicated. This small installation could readily dispose of the sewage by means of septic tank and underground drainage system.

Sunny Point Army Terminal has two types of sewage treatment systems. All of the buildings on land have septic tanks with underground drains. The sand in this area is so porous that disposal of waste in this manner is not a problem. The smoke rooms, and rest rooms for workers on the loading docks have overboard flush toilets that dump directly into the ship channel. In addition, most of the ships which are docked have overboard toilets. During the heavy loading period from April to June there could be a definite problem in the river. This problem could be reduced by connecting the dock toilets to a shore sewage disposal system.

Town of Southport discharges untreated domestic sewage into Cape Fear River near its mouth. There is no industrial waste in the outfall. The system serves a population of 1,600. The outfall extends into the river and no visible effect of the sewage can be observed on the surface of the water. Another problem encountered in the river is that of shrimp and fishing boats discharging unwanted

cargo into the river, including spillage in the loading and unloading process. Some of the fish and shrimp houses along the water front throw their waste overboard and have overboard toilets. The surface of the water around these areas becomes covered with floating solids, blood and oil. A step has been taken to eliminate some of this waste by rendering it and using it for fertilizer or other usable products. A tighter control of these activities would result in a larger economical return and aid in the removal of pollution from the surrounding waters. As indicated previously, the untreated sewage from Southport adds to the pollution in the river from upstream sources and threatens the safety of valuable shellfish areas near the mouth of the river.

Brunswick Navigation Company near Southport is a Menhaden fish plant where fish meal fertilizer is made. Fish oil is a by-product of this process. When the docked boats are unloading their cargo many of the fish or pieces of fish drop overboard or the unloading mechanism grinds the fish up and causes a bloody and greasy scum on the water around the ships. In addition, the water used in removing the fish from the holds is dumped overboard. Other wastes consist of spilled or waste stick water, condenser water, and washdown water, all of which will contain an extremely high B.O.D. At ebb tide much of these solids settle on the marshland near the plant and cause a very strong pungent odor. The waste from this plant are discharged into the Intracoastal Waterway a short distance west of the Town of Southport. Overboard toilets also are used for disposing of part of the sewage.

Southport Fishery is a Menhaden plant where operations are similar to those described above for the Brunswick Navigation Company except on a much smaller scale. The condition of the water in the vicinity of the plant is also similar to that of the plant described above.

The analytical data collected in both 1955 and 1956 show that the dissolved oxygen in the water of the Intracoastal Waterway is depressed by the pollution from the two fish processing plants. In 1955 some of the depression of dissolved oxygen was caused by intrusion of swamp water from Cape Fear River. In addition, coliform bacteria were found in large numbers which affect adversely the waters over-laying shellfish beds in this area. Corrective action is indicated.

Fort Caswell-The Baptist Assembly Grounds, located at Fort Caswell, are operated only three months a year. There are ten permanent residents in the winter and a summer peak enrollment of 1,200 people, of which 1,000 are served by sewers. The domestic sewage is discharged into the river near its mouth. The outfall line is at least twenty feet below the surface of the river and discharges into approximately 45 feet of water. The overflow from the swimming pools, supplied by artesian wells, discharges onto the beach approximately 200 yards south of this outfall line. The beaches in the vicinity of the outfall show some signs of a slime that could be caused by this sewage.

Oak Island Coast Guard Station has a septic tank from which effluent is discharged into a channel dug for boats on the landward side of the island. The channel joins the Intracoastal Waterway just west of the Town of Southport. The station has an average crew of thirteen men. The addition of an underground nitrification line would eliminate this pollution problem.

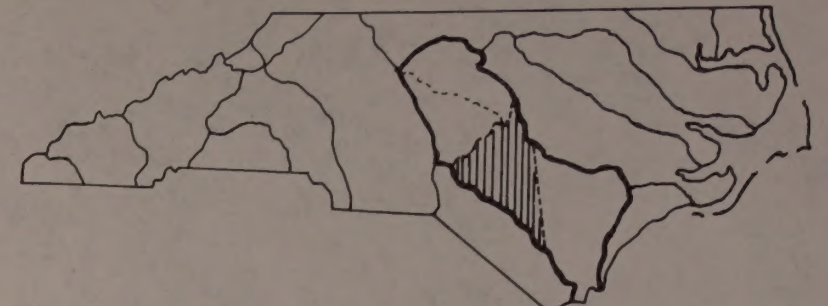
These places near the mouth of Cape Fear River may each be small within itself as compared to the vast amount of dilution available in the river, but the combination of all pollution has caused a problem that has forced some of

the shellfish growing areas in the vicinity to be closed for commercial usage. Corrective action is indicated.

Summary Discussion of Pollution in Segment V





There are a number of localized pollution problems in this segment which will require appropriate solutions to prevent nuisances. The discharge of treated industrial waste into Barlow Branch by the Mount Olive Pickle Company represents one of the major problems of this segment which is difficult to solve. The disposal of untreated sewage from a connected population of 44,700 at Wilmington is the major problem of the segment and will require detailed competent engineering study and design for its solution. This untreated sewage and the industrial waste from the Riegel Paper Corporation affect adversely commercial fishing waters in Cape Fear River. The pollution caused by the partially treated sewage at Wrightsville Beach is a constant threat to this popular resort and corrective measures should be taken as rapidly as possible. The treated sewage from Carolina Beach, Kure Beach, Fort Fisher Air Force Station, Southport, Baptist Assembly Grounds at Fort Caswell, and the nearby Oak Island Coast Guard Station combines with the diluted sewage from Wilmington to adversely affect valuable shellfish beds. The discharge of wastes from the fish house near Southport into the waters of the Intracoastal Waterway results in unsightly conditions and adds to the pollution affecting the valuable shellfish beds.

The Town of Mount Olive and the State Prison Department are to be highly commended for constructing modern and complete sewage treatment plants. Those who have not taken necessary corrective action should do so as rapidly as possible.

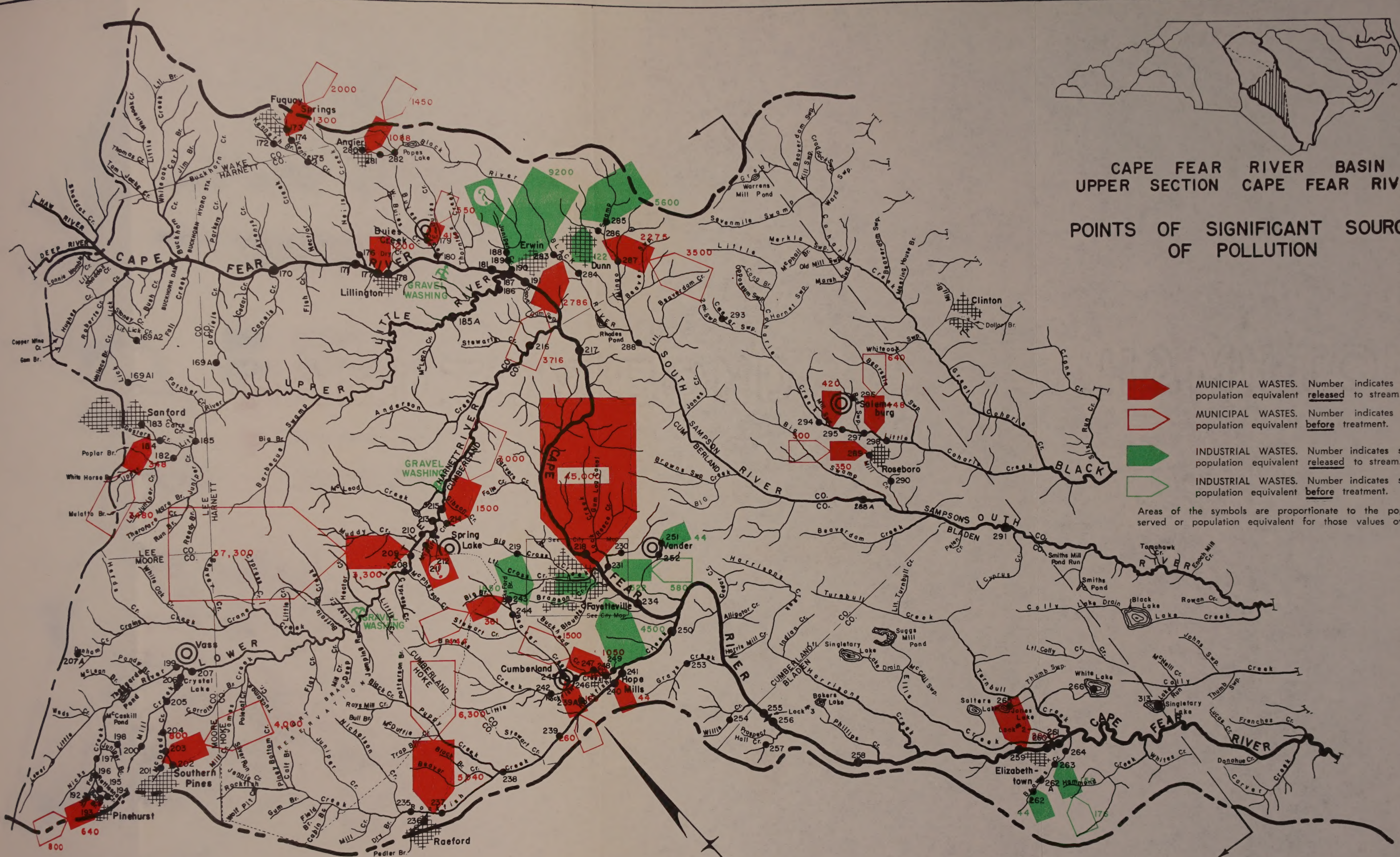


CAPE FEAR RIVER BASIN UPPER SECTION CAPE FEAR RIVER

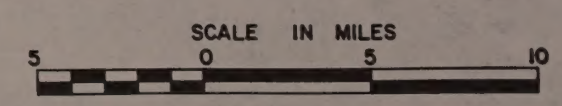
POINTS OF SIGNIFICANT SOURCES OF POLLUTION

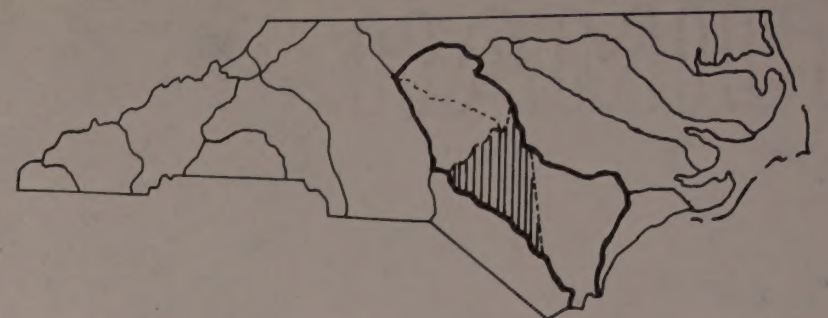
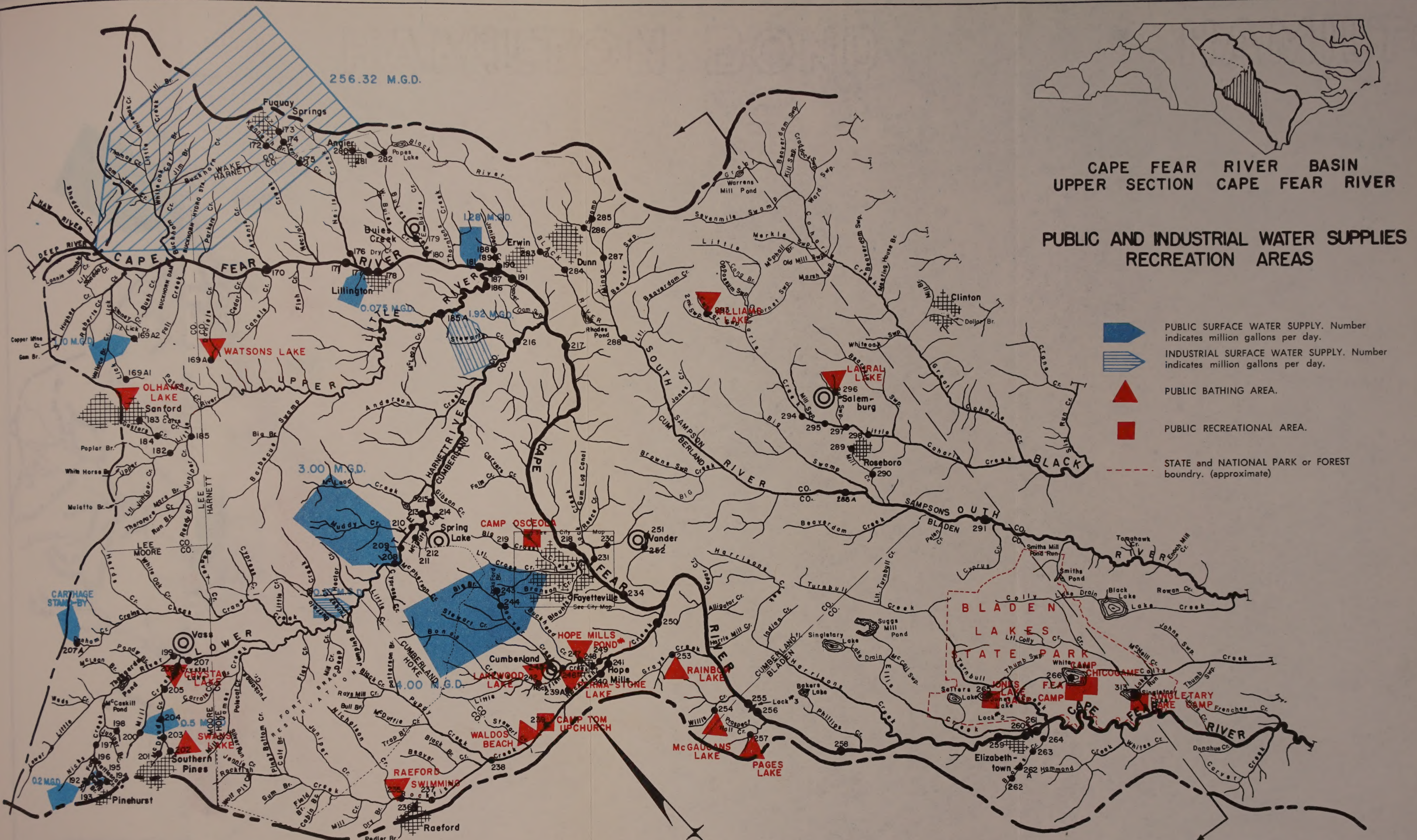
-  MUNICIPAL WASTES. Number indicates sewage population equivalent released to stream.
-  MUNICIPAL WASTES. Number indicates sewage population equivalent before treatment.
-  INDUSTRIAL WASTES. Number indicates sewage population equivalent released to stream.
-  INDUSTRIAL WASTES. Number indicates sewage population equivalent before treatment.

Areas of the symbols are proportionate to the population served or population equivalent for those values over 100



DIVISION OF WATER POLLUTION CONTROL
STATE STREAM SANITATION COMMITTEE
N.C. STATE BOARD OF HEALTH
RALEIGH, N.C.
1956



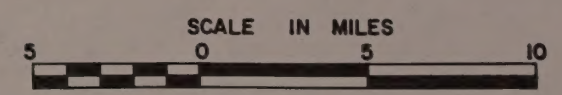


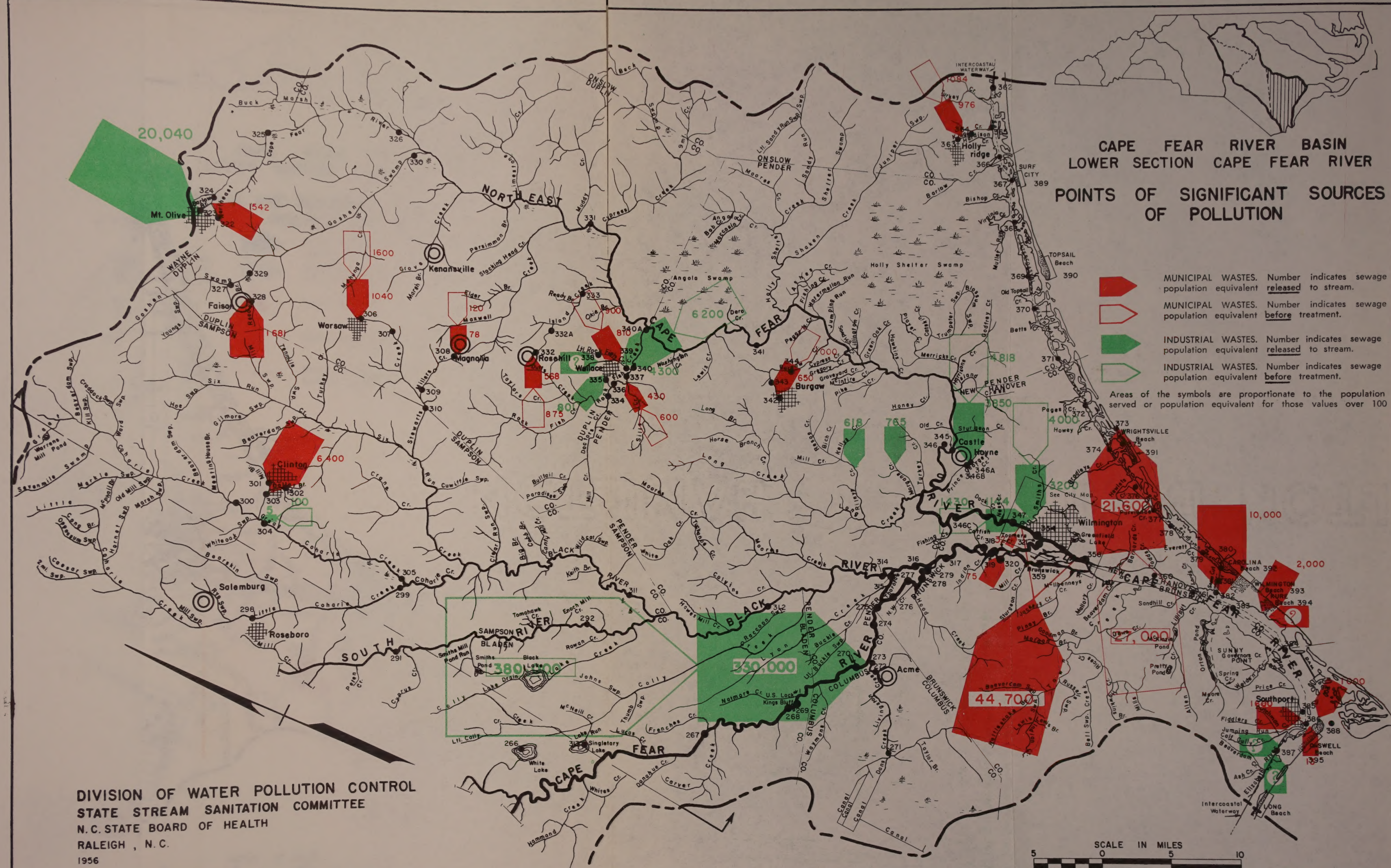
CAPE FEAR RIVER BASIN
UPPER SECTION CAPE FEAR RIVER

PUBLIC AND INDUSTRIAL WATER SUPPLIES
RECREATION AREAS

- PUBLIC SURFACE WATER SUPPLY. Number indicates million gallons per day.
- INDUSTRIAL SURFACE WATER SUPPLY. Number indicates million gallons per day.
- PUBLIC BATHING AREA.
- PUBLIC RECREATIONAL AREA.
- STATE and NATIONAL PARK or FOREST boundry. (approximate)

DIVISION OF WATER POLLUTION CONTROL
STATE STREAM SANITATION COMMITTEE
N.C. STATE BOARD OF HEALTH
RALEIGH, N.C.
1956





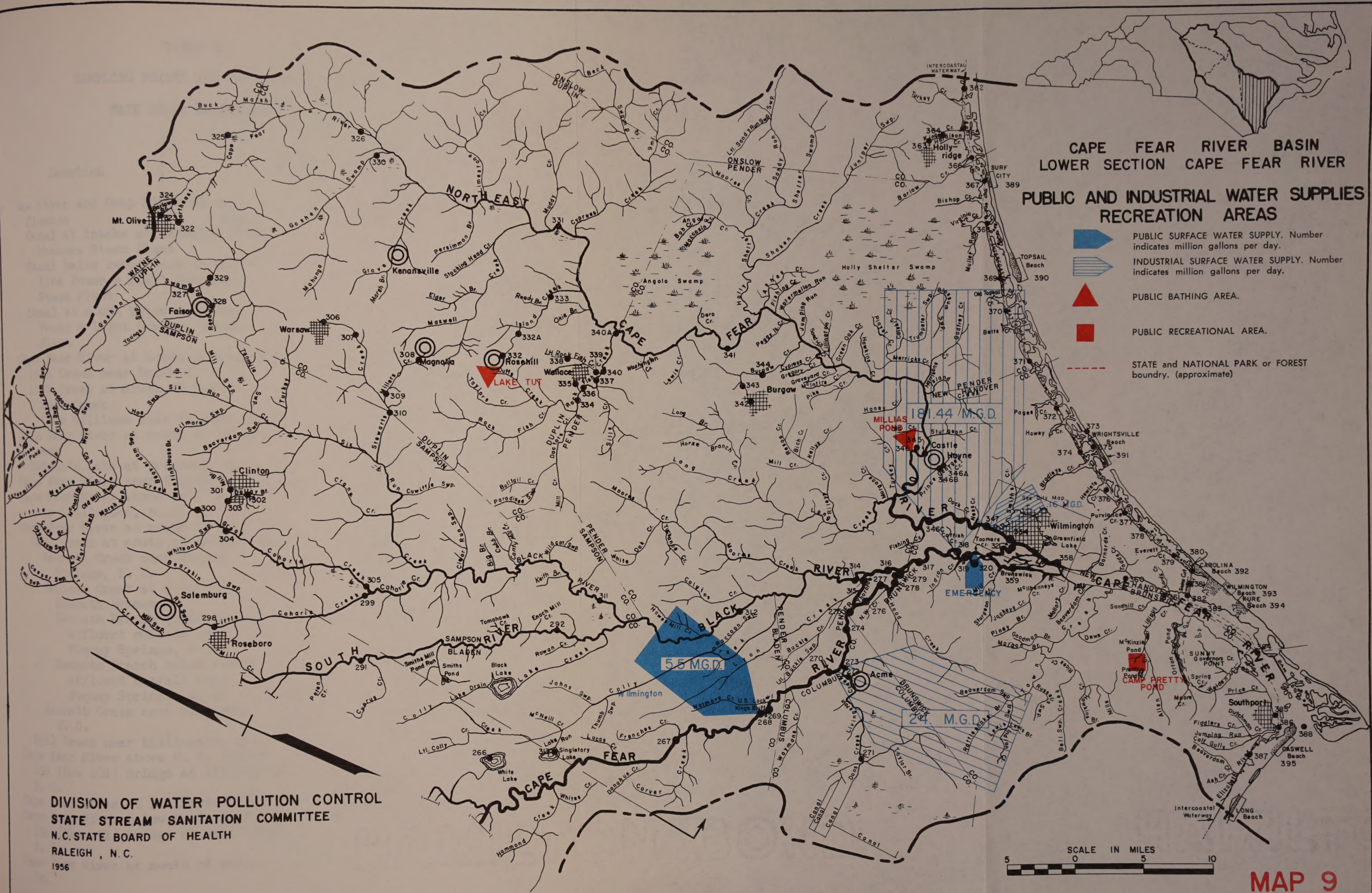
CAPE FEAR RIVER BASIN
LOWER SECTION CAPE FEAR RIVER
POINTS OF SIGNIFICANT SOURCES
OF POLLUTION

- MUNICIPAL WASTES. Number indicates sewage population equivalent released to stream.
- MUNICIPAL WASTES. Number indicates sewage population equivalent before treatment.
- INDUSTRIAL WASTES. Number indicates sewage population equivalent released to stream.
- INDUSTRIAL WASTES. Number indicates sewage population equivalent before treatment.

Areas of the symbols are proportionate to the population served or population equivalent for those values over 100

DIVISION OF WATER POLLUTION CONTROL
STATE STREAM SANITATION COMMITTEE
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1956

SCALE IN MILES
0 5 10



DIVISION OF WATER POLLUTION CONTROL
STATE STREAM SANITATION COMMITTEE
N.C. STATE BOARD OF HEALTH
RALEIGH, N.C.
1956

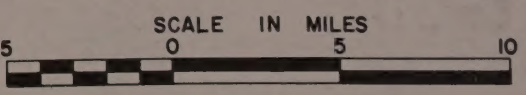


TABLE 17.
SAMPLING POINTS AND GAGING STATIONS

MAIN RIVER DRAINAGE AREA				
Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area In Sq. Mi.
Mile 0 for	Haw River and Deep River at con-			
167	fluence & Light	-	195.7*	-
	Canal at intake at Carolina Power/			
	Moncure Steam Plant	-	-	-
168	Canal below condensers at Caro-			
	lina Power & Light Moncure			
	Steam Plant	-	-	-
169	Canal at mouth below Carolina			
	Power & Light Moncure Steam			
	Plant	-	-	-
	Cape Fear River at mouth of Lick Cr.	-	193.6*	-
169A-1	Lick Creek near Sanford, N. C.	-	8.5a	-
	Lick Creek at mouth of Little			
	Lick Creek	-	4.1a	-
169A-2	Lake Williams near Sanford, N.C.	-	3.5a	-
	Cape Fear River at mouth of Daniels			
	Creek	-	187.1*	-
169A	Watson's Lake at Broadway, N. C.	-	6.6a	-
170	Cape Fear River near Kipling, N. C. R.P.		183.1*	3,350
171	Cape Fear River above Neil Creek			
	near Lillington, N. C.	-	177.5*	3,430
	Cape Fear River at mouth of Neil Cr.	-	177.3*	-
	Neil Creek at mouth of Kenneth Cr.	-	7.0a	-
172	Kenneth Creek near Fuquay			
	Springs, N. C.	R.P.	10.8a	5.58
	Kenneth Creek at mouth of			
	Kenneth Branch	-	10.5a	-
173	Kenneth Branch above sewage			
	effluent outfall near			
	Fuquay Springs, N. C.	R.P.	1.1a	3.98
174	Kenneth Branch below sewage			
	effluent outfall near			
	Fuquay Springs, N. C.	R.P.	0.8a	4.14
175	Kenneth Creek near Kennebec,			
	N. C.	R.P.	7.0a	13.5
			0.6a	37.6
176	Neil Creek near Lillington, N.C.	-		
177	Cape Fear River above U. S. Highway			
	15A (New 401) bridge at Lillington,			
	N. C.	-	176.6*	3,440
			176.2*	3,440
	Cape Fear River at Lillington, N.C. R.			
178	Cape Fear River below U. S. Highway			
	15A (New 401) bridge at Lillington,			
	N. C.	-	175.8*	3,440
	Cape Fear River at mouth of Buies			
	Cr.	-	172.4*	-

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area Sq. M.
179	Buies Creek at Buies Cr., N. C.	R.P.	1.9a	7
180	Buies Creek near Buies Cr., N.C.	R.P.	0.6a	26
181	Cape Fear River above Upper Little River near Erwin, N. C.	R.P.	167.7*	3,470
	Cape Fear River at mouth of Upper Little River	-	167.5*	-
182	Upper Little River near Sanford, N. C.	R.P.	35.5a	18
	Upper Little River at mouth of Gasters Creek	-	34.6a	-
	Gasters Creek at mouth of Unnamed Tributary	-	3.3a	-
183	Unnamed tributary to Gasters Cr. near Sanford, N. C.	R.P.	0.4a	
184	Gasters Creek near Sanford, N. C.	R.P.	1.6a	4
185	Upper Little River near Swann, N. C.	R.P.	33.5a	43
	Upper Little River near Lilling- ton	R.P.	11.2a	180
185A	Upper Little River near Bunn- level, N. C.	R.P.	6.8a	197
186	Upper Little River near Erwin, N. C.	R.P.	2.2a	218
187	Cape Fear River at Dunn Water In- take near Erwin, N. C.	-	167.1*	3,690
	Cape Fear River at Mouth of Stuart Creek	-	166.7*	-
188	Stuart Cr. on U.S. Highway 421 near Erwin, N. C.	R.P.	1.4a	13
189	Stuart Cr. near Erwin, N. C.	R.P.	1.1a	14
190	Stuart Cr. at Erwin, N. C.	R.P.	0.5a	15
191	Cape Fear River at N. C. Highway 217 at Erwin, N. C.	R.P.	166.0*	3,730
	Cape Fear River at Mouth of Little River	-	161.6*	-
	Little River at Mouth of Nicks Cr.	-	56.1a	-
	Nicks Cr. at Mouth of Joes Fork	-	4.4a	-
192	Joes Fork near Pinehurst, N.C.	R.P.	1.8a	3
	Joes Fork at Mouth of Board Cr.	-	1.7a	-
193A	Board Cr. above sewage ef- fluent outfall near Pine- hurst, N. C.	-	0.8a	-
193B	Board Cr. at Pinehurst, N.C.	-	1.1a	-
193	Board Cr. near Pinehurst, N. C.	R.P.	0.1a	
	Joes Fork at Mouth of Rattle- snake Creek	-	0.9a	-
194	Rattlesnake Cr. at Pine- hurst, N.C. (Upper Intake)	-	0.8a	
195	Rattlesnake Cr. at Pine- hurst, N.C. (Lower Intake)	-	0.4a	

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area In	
				Sq. Mi.	
196	Joes Fork near Eastwood, N.C.	R.P.	0.5a	5.80	
197	Nicks Cr. near Eastwood, N.C.	R.P.	3.8a	20.5	
	Nicks Cr. at Mouth of Unnamed Tributary	-	2.1a	-	
198	Unnamed tributary to Nicks Cr. near Eastwood, N. C.	-	0.5a	2.20	
199	Little River near Lakeview, N. C.	R.P.	49.8a	77.1	
	Little River at Mouth of Mill Cr.	-	49.3a	-	
200	Mill Cr. at Southern Pines, N.C., (Water Intake)	-	7.1a	1.90	
	Mill Cr. at Mouth of McDeeds Cr.	-	3.1a	-	
201	McDeeds Cr. above sewage ef- fluent outfall at Southern Pines, N. C.	R.P.	4.1a	2.24	
	McDeeds Cr. at mouth of Unnamed Tributary	-	3.9a	-	
202	Swans Lake Outlet on un- named tributary at Southern Pines, N. C.	-	0.3a	.57	
203	McDeeds Cr. below sewage ef- fluent outfall at Southern Pines, N. C.	R.P.	3.2a	4.22	
204	McDeeds Cr. near Niagara, N. C.	R.P.	1.5a	7.21	
205	Mill Cr. near Lakeview, N. C.	R.P.	2.0a	16.2	
206	Mill Cr. at Crystal Lake outlet at Lakeview, N. C.	R.P.	0.4a	20.3	
207	Little River at Vass, N. C.	R.P.	49.2a	98.6	
	Little River at mouth of Crane Cr.	-	36.2a	-	
	Crane Cr. at mouth of Dunhams Cr.	-	18.7a	-	
207A	Dunhams Cr. at Small Lake East of Filter Plant near Carthage, N. C.	-	4.3a	-	
	Crane Creek near Vass, N. C.	R.P.	14.2a	32.4	
208	Little River at Water Intake at Fort Bragg, N. C.	-	22.9a	325	
209	Little River above effluent outfall at Fort Bragg, N. C.	-	21.0a	327	
	Little River at mouth of Muddy Cr.	-	20.0a	-	
	Muddy Cr. near Manchester, N.C.	R.P.	0.1a	20.0	
210	Little River at Manchester, N.C.	R.P.	19.7a	348.0	
	Little River at mouth of McDuffie Creek	-	19.4a	-	
211	McDuffie Cr. at Manchester, N.C.	R.P.	0.2a	8.13	
212	McDuffie Cr. below Brooks Trailer Court effluent outfall at Manchester, N. C.	O.S.	0.1a	8.13	
213	Little River below McDuffie Cr. at Spring Lake, N. C.	R.P.	19.0a	346	
	Little River at mouth of Un- named Tributary	-	18.8a	-	

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area Sq. M.
214	Unnamed Tributary to Little River at Spring Lake, N. C.	R.P.	0.1a	
215	Little River at U. S. Highway 210 near Manchester, N. C.	R.P.	17.6a	360
	Little River at Linden, N. C.	R	4.6a	460
	Little River at mouth of Stewarts Creek	-	2.6a	-
	Stewarts Creek at Linden, N.C.	R.P.	0.7a	10.
216	Little River at N. C. Highway 217 at Linden, N. C.	R.P.	2.2a	474
217	Cape Fear River near Linden, N. C.	-	158.9*	4,230
218	Cape Fear River at new U. S. Highway 301 at Fayetteville, N. C.	-	140.9*	4,330
	Cape Fear River at mouth of Cross Creek	-	140.4*	-
	Cross Creek at mouth of Big Cross Creek	-	3.5a	-
219	Country Club Lake at Fayetteville, N. C.	-	2.8a	2.
220	Cross Creek at Langdon St. at Fayetteville, N. C.	R.P.	1.0a	14.
221	Little Cross Cr. at Water Intake at Filter Plant at Fayetteville, N. C.	-	0.4a	9.
222	Cross Cr. on Cool Springs St. at Fayetteville, N. C.	R.P.	1.8a	26.
	Cross Cr. at mouth of Blount Cr.	-	1.5a	-
	Blounts Cr. at mouth of Branson Creek	-	2.4a	-
	Branson Cr. at mouth of Hybarts Branch	-	1.9a	-
223	Hybarts Branch near Bonnie Doone, N. C.	R.P.	2.2a	.
224	Hybarts Branch at Morganton Road, Fayetteville, N. C.	R.P.	1.1a	1.
225	Branson Cr. at McBain Drive in Fayetteville, N. C.	R.P.	1.6a	3.6
226	Blounts Creek at Crock Street at Fayetteville, N. C.	R.P.	2.2a	9.9
227	Blounts Creek at Hawley Lane in Fayetteville, N. C.	R.P.	0.2a	11.7
228	Cross Cr. on Grove Street in Fayetteville, N. C.	R.P.	1.4a	38.6
229	Cross Creek at new U. S. Highway 301 Bridge at Fayetteville, N.C.	R.P.	0.6a	39.6
	Cape Fear River at Fayetteville, N. C.	R.	140.1*	4,380
	Cape Fear River at mouth of Lock Cr.	-	139.9*	-
	Lock Cr. at mouth of Buzzard Branch	-	0.8a	-
230	Buzzard Branch at Atlantic Coastline Railroad Bridge at East Fayetteville, N.C.	R.P.	0.2a	.3

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area In Sq. Mi.
231	Lock Cr. at Atlantic Coastline Railroad bridge at East Fayetteville, N. C.	R.P.	0.3a	41.1
	Cape Fear River at mouth of Atkinson Canal	-	139.7*	-
232	Atkinson Canal at Fayetteville, N. C.	-	0.1a	.13
	Cape Fear River at mouth of un- named tributary	-	138.7*	-
233	Unnamed tributary at Underwood Poultry Co. at Fayetteville, N. C.	R.P.	0.6a	Indt.
234	Cape Fear River near Fayetteville, N. C.	R.P.	136.4*	4,420
	Cape Fear River at mouth of Rock- fish Creek	-	133.6*	-
235	Rockfish Cr. at Raeford, N. C.	R.P.	25.1a	90.7
	Rockfish Cr. at mouth of Pedlers Branch	-	23.7a	-
236	Pedlers Branch at Raeford, N.C.	R.P.	0.2a	2.27
237	Rockfish Creek at Old U. S. High- way 15-A Bridge at Raeford, N. C.	R.P.	23.3a	95.7
238	Rockfish Cr. at Rockfish, N.C.	R.P.	18.2a	147
239	Rockfish Cr. (Upchurch Pond) near Hope Mills, N. C.	-	11.2a	178
	Rockfish Cr. at mouth of un- named tributary	-	10.1a	-
239A	Perma Stone Lake on unnamed tributary near Hope Mills, N.C.	-	0.6a	-
240	Rockfish Cr. above Domestic Sew- age outfall at Hope Mills, N.C.	R.P.	6.9a	189
241	Rockfish Cr. at Hope Mills, N.C.	R.P.	6.8a	189
	Rockfish Cr. near Hope Mills, N. C. (Mouth of Little Rock- fish Creek)	-	5.5a	284
242	Little Rockfish Creek (Lakewood Lake) near Cumberland, N. C.	-	6.8a	83.4
	Little Rockfish Creek at mouth of Big Beaver Creek	-	5.2a	-
	Big Beaver Creek at mouth of Jacks Ford Branch	-	6.9a	-
243	Jacks Ford Branch at Bonnie Doone, N. C.	R.P.	0.8a	.48
244	Big Beaver Creek at Bonnie Doone, N. C.	R.P.	6.7a	10.6
245	Big Beaver Creek at Cumber- land, N. C.	R.P.	0.8a	31.1
246	Little Rockfish Creek at Cum- berland, N. C.	R.P.	4.4a	83.7
247	Little Rockfish Creek (Hope Mills Pond No. 1) at Hope Mills, N. C.	-	2.5a	94.4

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area Sq. Mi.
248	Little Rockfish Creek at Hope Mills, N. C.	R.P.	2.0a	95.5
249	Little Rockfish Creek below sewage effluent outfall near Hope Mills, N. C.	-	1.8a	95.6
250	Rockfish Creek near Cedar Creek, N. C.	-	1.7a	300
	Cape Fear River at mouth of un- named tributary	-	132.8*	-
251	Unnamed Tributary to Cape Fear River at Vander, N. C.	R.P.	6.1a	.9
252	Unnamed Tributary to Cape Fear River near Vander, N. C.	R.P.	5.5a	.9
	Cape Fear River at mouth of Greys Creek	-	124.3*	-
253	Greys Creek (Rainbow Lake) near Hope Mills, N. C.	-	1.1a	-
	Cape Fear River at mouth of Willis Creek	-	121.4*	-
254	Willis Creek (McGreugans Lake) near Duarte, N. C.	-	1.5a	-
255	Cape Fear River above Lock No. 3 at Tolar Landing, N. C.	-	120.4*	4,810
	Cape Fear River at Lock No. 3 near Tarheel, N. C.	R.	120.2*	4,810
256	Cape Fear River below Lock No. 3 at Tolar Landing, N. C.	-	119.9*	4,810
	Cape Fear River at mouth of Prospect Hall Creek	-	118.8*	-
257	Prospect Hall Creek (Pages Lake) at Duarte, N. C.	-	1.7a	-
258	Cape Fear River at Tarheel, N. C.	-	113.1*	4,840
	Cape Fear River at mouth of Harrison Creek	-	108.7*	-
	Harrison Cr. at Whiteoak, N. C.	R.P.	1.7a	46.6
	Cape Fear River at mouth of Ellis Creek	-	101.5*	-
259	Ellis Creek near Rusken, N. C.	R.P.	3.0a	44.5
	Cape Fear River at Elizabethtown, N. C.	-	98.8*	4,980
260	Cape Fear River above Lock No. 2 at Browns Landing, N. C.	O.S.	97.2*	4,990
261	Cape Fear River below Lock No. 2 at Browns Landing, N. C.	O.S.	96.6*	4,990
	Cape Fear River at mouth of Brown Creek	-	96.0*	-
262	Browns Cr. at U. S. Highway 701 near Elizabethtown, N. C.	R.P.	4.1a	14.1
262A	Browns Creek near Elizabethtown, N. C.	R.P.	2.5a	17.3
263	Browns Creek at Elizabethtown, N. C.	-	2.1a	17.3

	Location	Stage Ref.	Stream Mileage	Drainage
				Area In Sq. Mi.
4	Browns Cr. at N. C. Highway 87 near Elizabethtown, N. C.	R.P.	1.7a	17.7
	Cape Fear River at mouth of Turn- bull Creek	-	95.8*	-
	Turnbull Cr. near Elizabethtown, N. C.	R.P.	6.5a	64.9
	Turnbull Cr. at mouth of Jones Lake drain	-	4.3a	-
5	Jones Lake near Elizabethtown, N. C.	-	1.9a	-
	Turnbull Cr. at mouth of White Lake drain	-	3.5a	-
6	White Lake at White Lake, N. C.	-	4.0a	-
	Cape Fear River at mouth of Ham- mond Creek	-	87.0*	-
	Hammond Cr. near Lisbon, N. C.	R.P.	3.0a	17.1
	Hammond Cr. at mouth of Whites Creek	-	1.4a	-
	Whites Cr. near Lisbon, N. C.	R.P.	1.1a	13.1
7	Cape Fear River at Carvers, N. C.	-	74.2*	5,180
	Cape Fear River at mouth of Carvers Creek	-	73.7*	-
	Carvers Cr. near Carvers, N. C.	R.P.	3.9a	9.80
8	Cape Fear River above Lock No. 1 at Kings Bluff, N. C.	O.S.	66.1*	5,220
9	Cape Fear River below Lock No. 1 at Kings Bluff, N. C.	O.S.	65.8*	5,220
0	Cape Fear River at Mile Marker 31 near Acme, N. C.	-	58.6*	5,280
	Cape Fear River at mouth of Livingston Creek	-	57.2*	-
1	Livingston Cr. near Acme, N. C.	R.P.	6.7a	113
2	Livingston Cr. at Acme, N. C.	-	2.4a	128
3	Livingston Cr. above Cape Fear River near Acme, N. C.	-	0.5a	130
4	Cape Fear River at Mile Marker 28 near Acme, N. C.	-	55.5*	5,410
5	Cape Fear River at Mile Marker 26 near Acme, N. C.	-	53.5*	5,410
6	Cape Fear River at Mile Marker 24 near Acme, N. C.	-	51.5*	5,420
7	Cape Fear River at Mile Marker 22 near Acme, N. C.	-	49.5*	5,420
8	Cape Fear River at Mile Marker 20 near Northwest, N. C.	-	47.5*	5,420
	Cape Fear River at mouth of Hood Cr.	-	46.2*	-
	Hood Cr. near Ieland, N. C.	R.P.	5.8a	22.9
9	Cape Fear River at Mile Marker 18 near Northwest, N. C.	-	45.5*	5,470
	Cape Fear River at mouth of Black River	-	43.2*	-
	Black River at mouth of South River	-	29.0a	-

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area Sq. Mi.
	South River at mouth of Black River (Little Black River)	-	56.9a	-
280	Black River at Angier, N.C.	R.P.	25.8a	1.1
281	Black River near Angier, N.C.	R.P.	24.7a	2.5
282	Black River near Barclays- ville, N. C.	R.P.	23.6a	4.3
283	Black River near Erwin, N. C.	R.P.	8.2a	43.6
284	Black River near Dunn, N. C.	-	6.1a	49.2
	South River at mouth of Mingo Swamp	-	56.9a	-
285	Mingo Swamp at N. C. Highway 55 near Dunn, N. C.	R.P.	7.8a	31.1
	Mingo Swamp at mouth of Stoney Run	-	6.5a	-
286	Stoney Run near Dunn, N. C.	R.P.	1.1a	7.7
287	Mingo Swamp near Dunn, N. C.	R.P.	5.5a	50.2
288	South River near Falcon, N. C.	R.P.	55.5a	143
288A	South River at Roseboro, N. C.	R.P.	32.1a	276
	South River at mouth of Mill Creek	-	30.3a	-
289	Mill Creek at Roseboro, N. C.	-	4.0a	.5
290	Mill Creek near Roseboro, N. C.	R.P.	2.3a	2.9
291	South River near Parkersburg, N. C.	W.W.	22.8a	382
292	South River near Kerr, N. C.	R.P.	4.7a	470
	Black River at mouth of Coharie Creek	-	50.2a	-
	Coharie Cr. at mouth of Little Coharie Creek	-	7.4a	-
	Little Coharie Cr. at mouth of Caesar Swamp	-	24.7a	-
293	Williams Lake (Caesar Swamp) near Midway, N. C.	-	2.7a	-
294	Little Coharie Cr. at Salem- burg, N. C.	R.P.	17.2a	73.6
295	Little Coharie Cr. near Salemberg, N. C.	-	15.3a	77.3
	Little Coharie Cr. at mouth of Rye Swamp	-	14.3a	-
296	Laurel Lake (Rye Swamp) near Salemburg, N. C.	-	2.3a	-
297	Little Coharie Cr. at N. C. Highway 242 near Roseboro, N. C.	-	13.3a	90.7
298	Little Coharie Cr. near Roseboro, N. C.	R	11.8a	96.4
299	Little Coharie Cr. near Ingold, N. C.	R.P.	0.2a	158
	Coharie Cr. at mouth of Great Coharie Creek	-	7.4a	-
300	Great Coharie near Clinton, N. C.	R.P.	14.2a	136

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area in Sq. Mi.
	Great Coharie at mouth of Mill Branch	-	12.7a	-
01	Mill Branch at Clinton, N. C.	R.P.	2.2a	7.64
	Mill Branch at mouth of Dollar Branch	-	1.8a	-
02	Dollar Branch at Clinton, N. C.	R.P.	1.1a	1.86
03	Mill Branch near Clinton, N. C.	R.P.	1.7a	10.2
04	Great Coharie Cr. at N. C. Hwy. 24 near Clinton, N.C.	R.P.	12.0a	158
05	Great Coharie Cr. near Ingold, N. C.	R.P.	0.2a	207
	Black River at mouth of Six Run	-	50.2a	-
	Six Run near Clinton, N. C.	R.P.	18.8a	110
	Six Run at mouth of Stewarts Creek	-	11.4a	-
06	Stewarts Cr. at Warsaw, N.C.	R.P.	12.9a	1.71
07	Stewarts Cr. near Warsaw, N. C.	R.P.	10.6a	4.44
	Stewarts Cr. at mouth of Millers Creek	-	5.2a	-
	Millers Cr. at mouth of unnamed tributary	-	3.9a	-
08	Unnamed tributary to Millers Cr. at Magnolia, N. C.	R.P.	0.2a	1.53
09	Millers Cr. near Magnolia, N. C.	R.P.	0.5a	12.2
10	Stewarts Cr. near Magnolia, N. C.	R.P.	4.0a	49.0
	Black River near Tomahawk, N.C.	W.W.	46.8a	680
11	Black River at Ivanhoe, N. C.	R.P.	32.5a	740
12	Black River near Kelley, N. C.	R.P.	18.0a	1,250
	Black River at mouth of Colly Cr.	-	12.2a	-
	Colly Cr. to mouth of Lake Run	-	20.5a	-
13	Singletary Lake near White Lake, N. C.	-	1.5a	-
	Colly Cr. near Kelly, N. C.	R.	6.9a	85.2
	Black River at mouth of Moores Cr.	-	9.6a	-
	Moores Cr. near Atkinson, N.C.	R.P.	10.4a	51.9
14	Black River near Montague, N. C.	-	4.2a	1,530
	Black River at mouth of Therofare	-	3.0a	-
15	Therofare near Montague, N. C.	-	0.5a	-
16	Black River near Richards, N. C.	-	1.0a	1,560
17	Cape Fear River at Mile Marker 14 near Richards, N. C.	-	41.5*	7,040
17-1	Cape Fear River at Mile Marker 9 near Royster, N. C.	-	36.5*	-
18	Cape Fear River at Mile Marker 7 near Royster, N. C.	-	35.5*	7,050

Sta. No.	Location	Stage Ref.	Stream Mileage	Drain Area Sq. M.
318A	Cape Fear River at Carolina Power & Light Co. Steam Plant near Royster, N. C.	-	34.5*	7,060
319	Cape Fear River at Mile Marker 5 at Royster, N. C.	-	33.3*	7,060
320	Cape Fear River at Mile Marker 4 at Navassa, N. C.	-	32.0*	7,060
320-1	Cape Fear River at Mile Marker 3 near Navassa, N. C.	-	30.5*	-
321	Cape Fear River at Mile Marker 1 near Wilmington, N. C.	-	28.5*	7,060
321-1	Cape Fear River at U. S. Hwy. 17 Bridge near Wilmington, N. C.	-	28.3*	-
	Cape Fear River at mouth of North- east Cape Fear River	-	28.0*	-
322	Northeast Cape Fear River at Mount Olive, N. C.	R.P.	124.4a	2
	Northeast Cape Fear River at mouth of Barlow Branch	-	123.7a	-
323	Barlow Branch at Mount Olive, N. C.	R.P.	0.7a	0
324	Northeast Cape Fear River near Mount Olive, N. C.	R.P.	122.1a	10
325	Northeast Cape Fear River near Seven Spring, N. C.	R.P.	118.0a	30
326	Northeast Cape Fear River at Kornegay, N. C.	R.P.	105.4a	115
	Northeast Cape Fear River at mouth of Goshen Swamp	-	102.8a	-
327	Goshen Swamp at Faison, N. C.	R.P.	17.9a	59
	Goshen Swamp at mouth of Reedy Branch	-	17.5a	-
328	Reedy Branch at Faison, N. C.	R.P.	1.1a	3
329	Goshen Swamp near Faison	R.P.	16.2	65
330	Goshen Swamp near Kornegay, N. C.	R.P.	1.1a	180
331	Northeast Cape Fear River near Chinquapin, N. C.	R.	84.1a	589
	Northeast Cape Fear River at mouth of Island Creek	-	74.1a	-
	Island Cr. at mouth of un- named tributary	-	6.1a	-
332	Unnamed Tributary to Island Cr. at Rose Hill, N. C.	R.P.	2.5a	0
332A	Unnamed Tributary to Island Cr. near Charity, N. C.	R.P.	1.0a	2
333	Island Cr. near Rose Hill, N.C.	R.P.	3.0a	17
	Northeast Cape Fear River at mouth of Rock Fish Cr.	-	66.4a	-
	Rock Fish Cr. near Wallace, N.C.W.W.	-	12.1a	65
	Rock Fish Cr. at mouth of Deetors Cr.	-	11.3a	-

	Location	Stage Ref.	Stream Mileage	Drainage Area In Sq. Mi.
	Doctors Creek near Wallace, N. C.	R.P.	3.0a	53.2
4	Rock Fish Creek below Doctors Cr. near Wallace, N. C.	-	9.1a	122
	Rock Fish Cr. at mouth of Unnamed Tributary	-	8.3a	-
5	Unnamed Tributary to Rock Fish Cr. at Wallace, N. C.	R.P.	0.4a	1.07
6	Rock Fish Cr. at Wallace, N. C.	R.P.	7.5a	125
7	Rock Fish Cr. at U. S. Hwy. 117 Bridge near Wallace, N. C.	-	5.1a	152
	Rock Fish Cr. at mouth of Little Rock Fish Creek	-	4.2a	-
7A	Little Rock Fish Cr. at Boney Mill Pond at Tin City, N. C.	-	2.2a	9.5
8	Little Rock Fish Cr. at Tin City, N. C.	R.P.	1.4a	9.53
9	Little Rock Fish Cr. near Tin City, N. C.	R.P.	0.6a	11.2
10	Rock Fish Cr. near Tin City, N. C.	R.P.	3.6a	165
10A	Rock Fish Cr. at mouth near Wallace, N. C.	-	0.0a	169
11	Northeast Cape Fear River near Burgaw, N. C.	-	51.8a	920
	Northeast Cape Fear River at mouth of Burgaw Cr.	-	42.6a	-
12	Burgaw Cr. at Burgaw, N. C.	R.P.	10.1a	1.92
13	Burgaw Cr. at U. S. Hwy. 117 near Burgaw, N. C.	R.P.	8.9a	8.77
14	Burgaw Cr. near Burgaw, N. C.	R.P.	5.9a	17.9
15	Northeast Cape Fear River at Castle Hayne, N. C.	-	22.5a	1,500
	Northeast Cape Fear River at mouth of Unnamed Tributary	-	22.3a	-
16	Millias Pond (Unnamed Tributary to Northeast Cape Fear River) at Pauls Place, N. C.	-	0.1a	-
	Northeast Cape Fear River at mouth of Prince George Cr.	-	17.8	-
16A	Prince George Cr. at Castle Hayne, N. C.	-	3.7a	-
16B	Prince George Cr. near Castle Hayne, N. C.	-	4.0a	-
16-1	Northeast Cape Fear River at Richards, N. C.	-	9.0a	-
16-2	Northeast Cape Fear River near Richards, N. C.	-	6.0a	-
16-3	Northeast Cape Fear River near Wrightsboro, N. C.	-	5.1a	-
17	Northeast Cape Fear River near Wilmington, N. C.	-	3.2a	1,710

366 Sta. No.	Location	Stage Ref.	Stream Mileage	Drain Area Sq. M
	Northeast Cape Fear River at mouth of Smiths Creek	-	2.0a	-
348	Smiths Cr. at Twenty-Third St. at Wilmington, N. C.	-	3.7a	20
	Smiths Cr. at mouth of un- named tributary	-	3.6a	-
349	Unnamed tributary to Smiths Cr. near Wilmington, N. C.	-	0.3a	0
350	Smiths Cr. at Atlantic Coast- line Railroad Bridge at Wilmington, N. C.	-	2.8a	26
351	Smiths Cr. at Wilmington, N.C.	-	1.6a	26
352	Smiths Cr. at mouth at Wilmington, N. C.	-	0.1a	27
353	Northeast Cape Fear River at Wilmington, N. C.	-	1.4a	1,740
353-1	Northeast Cape Fear River at U. S. Hwy. 117 Bridge at Wilmington, N. C.	-	0.8a	-
354	Northeast Cape Fear River at Brunswick St. at Wilmington, N. C.	-	0.5a	1,740
354-1	Cape Fear River at foot of Market St. in Wilmington, N. C.	-	27.6*	-
355	Cape Fear River at Church St. at Wilmington, N. C.	-	27.1*	8,800
355-1	Cape Fear River above buoy N "60" at Wilmington, N. C.	-	26.7*	-
356	Cape Fear River at Greenfield Cr. at Wilmington, N. C.	-	26.2*	8,810
	Cape Fear River at mouth of Greenfield Creek	-	26.1*	-
357	Greenfield Lake at Wilmington, N.C.	-	0.6a	-
357-1	Cape Fear River at buoy C "57" near Wilmington, N. C.	-	25.7*	-
357-2	Cape Fear River at buoy C "55A" near Wilmington, N. C.	-	25.3*	-
357-3	Cape Fear River at FL "56" near Wilmington, N. C.	-	25.1*	-
357-4	Cape Fear River at FL "55" near Wilmington, N. C.	-	24.7*	-
358	Cape Fear River above mouth of Brunswick River at Wilmington, N.C.	-	24.3*	8,810
	Cape Fear River at mouth of Brunswick River	-	23.9*	-
359	Brunswick River near Wilmington, N. C.	-	3.8a	15
359A	Brunswick River at mouth near Wilmington, N. C.	-	0.1a	-
359-1	Cape Fear River at buoy C "1" near Wilmington, N. C.	-	23.7*	-
359-2	Cape Fear River at buoy C "53" near Wilmington, N. C.	-	23.3*	-

Sta. No.	Location	Stage Ref.	Stream Mileage	Drainage Area In Sq. Mi.
59-3	Cape Fear River at FL "52" near Wilmington, N. C.	-	22.5*	-
59-4	Cape Fear River at buoy N "50" near Wilmington, N. C.	-	21.6*	-
59-5	Cape Fear River at buoy N "46A" near Wilmington, N. C.	-	20.8*	-
60	Cape Fear River at Campbell Island near Wilmington, N. C.	-	19.1*	8,990
60-1	Cape Fear River at buoy N "40" near Wilmington, N. C.	-	18.1*	-
61	Cape Fear River near Carolina Beach, N. C.	-	16.2*	9,000
	Cape Fear River at mouth of Lilliput Creek	-	15.4*	-
	Pretty Pond (Lilliput Cr.) near Southport, N. C.	-	6.2a	-
	Cape Fear River at mouth of Snows Cut (Island Waterway)	-	14.5*	-
62	Inland Waterway at Goose Bay near Hollyridge, N. C.	-	41.9a	-
	Inland Waterway at mouth of Kings Creek	-	39.6a	-
63	Kings Cr. at Hollyridge, N. C.	R.P.	3.6a	0.42
64	Kings Cr. near Hollyridge, N. C.	-	2.0a	2.43
65	Kings Cr. at mouth near Hollyridge, N. C.	-	0.3a	5.92
66	Inland Waterway at Morris Land- ing, N. C.	-	38.6a	-
67	Inland Waterway at Surf City, N.C.	-	35.0a	-
68	Inland Waterway at R Marker "90" near Edgecombe, N. C.	-	31.6a	-
69	Inland Waterway near R Marker "96" near Anandale, N. C.	-	27.9a	-
70	Inland Waterway at Factory Land- ing near Hampstead, N. C.	-	25.3a	-
71	Inland Waterway at R Marker "112" near Scotts Hill, N. C.	-	21.0a	-
72	Inland Waterway near R Marker "122" near Wrightsville, N. C.	-	17.1a	-
73	Moore Inlet near Wrightsville Beach, N. C.	-	-	-
74	Inland Waterway at Wrightsville Beach, N. C.	-	13.7a	-
75	Wrightsville Sound at Wrights- ville Beach, N. C.	-	-	-
76	Inland Waterway at R Marker "130" near Masonboro, N. C.	-	10.2a	-
77	Inland Waterway at R Marker "139" near Myrtle Grove, N. C.	-	7.8a	-
78	Inland Waterway at R Marker "145" near Myrtle Grove, N. C.	-	6.0a	-

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Sta. No.	Location	Stage Ref.	Stream Mileage	Drain Area Sq. M.
379	Inland Waterway at R Marker "158" near Carolina Beach, N. C.	-	3.8a	-
380	Inland Waterway at R Marker "161" near Carolina Beach, N. C.	-	1.6a	-
381	Inland Waterway at U. S. Highway 421 near Carolina Beach, N. C.	-	1.0a	-
382	Inland Waterway at mouth of Snows Cut near Carolina Beach, N. C.	-	0.0a	-
382-1	Cape Fear River at buoy C "33" near Wilmington, N. C.	-	13.9*	-
383	Cape Fear River at Carolina Beach, N. C.	-	11.1*	9,060
384	Cape Fear River at Kure Beach, N.C. Cape Fear River at mouth of Inland Waterway at Southport, N. C.	- -	8.2* 3.3*	9,090 -
387	Inland Waterway at Fort Caswell Bridge near Southport, N. C.	-	3.0a	-
386	Inland Waterway at Southport, N. C.	-	0.2a	-
385	Cape Fear River at Southport, N.C.	-	3.2a	-
388	Cape Fear River at Fort Caswell, N. C.	-	1.3a	9,130
	Cape Fear River at mouth	-	0	9,140
389	Atlantic Ocean at Surf City, N.C.	-	-	-
390	Atlantic Ocean at New Topsail Beach, N. C.	-	-	-
391	Atlantic Ocean and Inland Water- way at Wrightsville Beach, N.C.	-	-	-
392	Atlantic Ocean at Carolina Beach, N. C.	-	-	-
393	Atlantic Ocean at Wilmington Beach, N. C.	-	-	-
394	Atlantic Ocean at Kure Beach, N. C.	-	-	-
395	Atlantic Ocean at Fort Caswell, N. C.	-	-	-

a Miles from mouth of tributary

* Miles from Atlantic Ocean

Stage Reference

- R. - Recording Gage
 R.P. - Reference Point
 O.S. - Outside Staff (Staff Gage)
 W.W. - Wire Weight Gage

CAPE FEAR RIVER BASIN
MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Avg. Used M.G.D.	Owner- ship	Source of Supply	Im- pound- ed	Date Install- ed	Design Capacity	Treatment
Dunn	6,316	10,200	1.280	M	Cape Fear River	No	1927	2,000	Pre Cl ₂ , Alum, Sed., Filt., Lime, Calgon, Flouride, Post Cl ₂
Erwin Fayetteville	3,344 34,715	42,860	4.000	M	Town of Dunn Little Cross Cr., Cross Cr. and Cape Fear River	Yes	1954	8,000	Alum, Sed., Filt., Lime, Carbon, Calgon, Flouride, Post Cl ₂
Fort Bragg		42,000	4.500	Army	Little River	Yes	1941	7,000	Pre Cl ₂ , Alum, Sed., Filt., Post Cl ₂ , NH ₄
Lillington	1,061	1,600	0.075	M	Cape Fear River	No	1956	0.500	Alum, Sed., Filt., Post Cl ₂
Pinehurst, Inc.	1,016	1,600	0.200	P	Rattlesnake Creek Juniper Branch	No	1922	0.750	Filt., Post Cl ₂
Sanford	10,013	13,500	1.100	M	Lick Creek and Little Lick Creek	Yes	1933	1,400	Pre Cl ₂ , Alum, Lime, Sed., Filt., Soda Ash
Southern Pines	4,272	7,000	0.500	M	Mill Creek	Yes	1950	2,000	Pre Cl ₂ , Lime, Alum, Sed., Filt., Carbon, Calgon, Flouride, Post Cl ₂
Wilmington	45,043	55,150	5.500	M	Cape Fear River Toomers Cr. (emer.)	Yes	1944	10,000	Pre Cl ₂ , Alum, Sed., Filt., Calgon, NH ₄ , Post Cl ₂

TABLE 19
INDUSTRIAL SURFACE WATER SUPPLIES
CAPE FEAR RIVER BASIN
MAIN RIVER DRAINAGE AREA

Community or Industry	Est. Pop. 1950 Served	Avg. Used M.G.D.	Owner- ship	Source of Supply	Im- pound- ed	Date Install- ed	Design Capacity	Treatment
Acme - Acme Fertilizer Co. Riegel Paper Corp. Carolina Div.		*	P	Livingston Creek	No	"	"	None
		24,000 (1)	P	Cape Fear River	No	"	"	Pre Cl ₂ , Floccu- lated, Sed., Filt., Calgon, Post Cl ₂ .
Cumberland - Rockfish-Mebane Yarn Mills		**	P	Big Beaver Creek	Yes	"	"	None
Fayetteville - Cumberland Sand and Gravel Co.		0.67	P	Little River	No	"	"	None
Hope Mills - Brower Mills		**	P	Rockfish Creek	Yes	"	"	None
Rockfish-Mebane Yarn Mills		**	P	Little Rockfish Creek	Yes	"	"	None
Lillington-Becker County Sand and Gravel Co.		1.92	P	Upper Little River	No	"	"	None
Moncure - Carolina Power & Light Co.		256,320*	P	Cape Fear River	No	"	(1) Alum, Sed., Filt., Soda Ash, Cl ₂ .	
Navassa - Armour Fertilizer Co.		*	P	Cape Fear River	No	"	"	None
Virginia-Carolina Chemical Co.		*	P	Cape Fear River	No	"	"	None
Wilmington-Carolina Power & Light Co.		181,440*	P	Cape Fear River	No	"	"	None
Swift and Co.		0.160	P	Northeast Cape Fear River	No	"	"	None

* Used for Cooling Water.

** Used for Hydro-electric Power.

(1) Part of water used for public drinking water.

CAPE FEAR RIVER BASIN
MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner-ship	Est. Consumption M.G.D.	No. of Wells	Est. Total Yield M.G.D.	Date Installed	Type of Treatment
Buies Creek (Campbell College)	435	600	P	0.060	2	-	1924, 1951	None
Burgaw	1,613	1,800	M	0.200	3	-	1936	Settle, Filtration
Carolina Beach	1,080	W-1,080	M	0.165	6	0.860	1934	CL ₂
		S-10,000		1.000				
Clinton	4,414	7,500	M	1.000	4	1.440	1911	CL ₂
Coats	1,047	400	P	0.040	Springs	-	-	Chlorination
Cumberland (uninc.)	500	260	P	0.026	1	-	-	None
Elizabethtown	1,611	2,896	M	0.289	3	-	1935	Aeration
Faison	768	860	M	0.050	2	-	1935	None
Ft. Caswell State Baptist Assembly	50	W-12	P	0.001	4	-	1942	Filtration, CL ₂
		S-1,200		6.120				
Fuquay Springs	1,998	2,500	M	0.160	5	-	1946	Sand Filtration, Post CL ₂ , Lime, Zeolite, Softening
Holly Ridge	1,084	542	M	0.054	1	-	1950	None
Hope Mills	1,077	1,500	M	0.100	2	-	1950-1952	None
Keransville	674	600	M	0.060	1	0.144	1934	None
Kure Beach	228	W-228	M	0.023	3	-	1953	None
		S-15,000		1.500				
Le Beach	800	W-80	P	0.008	1	-	1937	None
		S-560		0.056				
Mayalia	585	360	M	0.020	1	-	1950	None
Mountain (Inst.)	-	1,000	State	0.100	6	-	-	CL ₂
Mooreville	3,732	3,000	M	0.300	4	0.576	1925	CL ₂
Raeford	2,030	3,000	M	0.350	5	-	1917-50-51-54	Aeration, CL ₂ , Calgon, Lime

TABLE 20
PUBLIC GROUND WATER SUPPLIES
CAPE FEAR RIVER BASIN
MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Est. Consumption M.G.D.	No. of Wells	Est. Total Yield M.G.D.	Date Installed	Type of Treatment
Roseboro	1,241	1,160	M	0.060	2	1.584	-	None
Rose Hill	896	933	M	0.025	2	0.115	1940	None
Salemburg-Pineland								
College & E. M. I.	435	420	P	0.042	1	-	-	None
Southport	1,748	1,700	M	0.100	2	-	1913	None
Spring Lake	3,500	4,400	P	0.117	3	0.374	1942	None
Sunny Point Munitions Loading Terminal	-	-	Army	-	6	1,728	1955	Cl ₂
Surf City and Topsail Beach	225	W-50 S-200	P	0.005 0.020	1	-	-	Cl ₂
Vass	757	792	M	0.079	3	-	1928-1949	None
Wallace	1,622	2,037	M	0.085	?	0.720	1926-1946	None
Warsaw	1,598	1,700	M	0.075	3	-	1919	None
Wilmington Beach	100	728	P	0.073	-	-	-	None
Wrightsville Beach	711	W-1,000 S-30,000	M	0.288 1,000	6	0.830	1938-1943	Cl ₂

INDUSTRIAL GROUND WATER SUPPLIES

CAPE FEAR RIVER BASIN

MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Estimated Consumption M.G.D.	No. of Wells	Est. Total Yield M.G.D.	Date Installed	Type of Treatment
Acme - Armour Fertilizer Co.	-	-	P	0.001	1	-	-	None
Burgaw - Concentrates Co.	-	-	P	-	1	-	-	None
Pender Packing Co.	-	-	P	0.003	1	-	-	None
Rooks Packing Co.	-	-	P	0.003	1	-	-	None
Calypso - Calypso Veneer Co.	-	-	P	0.010	1	-	-	None
Clinton - Griffin Poultry Co.	-	-	P	0.005	1	-	-	None
Dunn - M. F. Hodges and Son	-	-	P	0.002	1	-	-	None
Wellons Candy Co.	-	-	P	0.024	12	0.024	-	Treated for corrosion
Elizabethtown - Bladen Slaughter House	-	-	P	0.001	1	-	-	None
Butler Market Abattoir	-	-	P	0.002	1	-	-	None
Fayetteville - Underwood Poultry Co.	-	-	P	0.135	1	-	-	None
Mt. Olive - Mt. Olive Pickle Co.	-	-	P	0.150*	2	-	-	None
W. H. Tillman	-	-	P	0.004	1	-	-	None
Navassa - Armour Fertilizer Co.	-	-	P	0.004	1	-	-	None
Roseboro - Denny Veneer Co.	-	-	P	0.007	1	-	-	None
Vander - Southern Resin & Glue and Thomason Plywood Co.	-	-	P	-	1	-	-	None
Wallace - Bonds Abattoir	-	-	P	0.009	2	-	-	None
Wilmington - Carolina Power & Light Co.	-	-	P	0.002	2	0.216	1953	None
Wanets Sausage Co.	-	-	P	0.024	1	0.060	-	None
Wilmington Packing Co.	-	-	P	0.082	-	0.216	-	None

* Part of water from Town of Mt. Olive.

TABLE 22

POINTS OF SIGNIFICANT SOURCES OF POLLUTION

CAPE FEAR RIVER BASIN

MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Kind of Waste	Est. Gals Waste M.G.D.	Type Treat- ment	Design Capa- city M.G.D.	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream and Interconnecting Streams to Main Stream
Air Force Sta.-Kure Beach Acme	-	-	Army	D.S.	-	None	-	(1) -	(1) -	Cape Fear River
Acme Fertilizer Co.	-	-	P	I.W.	-	None	-	*	*	Livingston Cr. to Cape Fear River
Riegel Paper Corp. - Carolina Division Angier	-	-	P	D.S. & I.W. D.S.	24.24 0.050	Lagoon Pri.	600.000 -	380,000 1,450	330,000 1,088	Cape Fear River Black R. to South R. to Black R. to Cape Fear R. Jacks Ford Br. to Big Beaver Cr. to Little Rockfish Cr. to Rockfish Cr. to Cape Fear River Little R. to Cape Fear R. Inland Waterway to Cape Fear River
Bonnie Doone	-	-	M	D.S.	0.144	Sec.	0.180	1,444	361	
Brooks Trailer Court Brunswick Navigation Co.	-	-	P P	D.S. I.W.	- -	Sec. None	- -	(2) ?	(2) ?	
Buies Creek-Campbell College Burgaw	435 1,613	550 1,000	P M	D.S. D.S.	0.055 0.110	Pri. Pri.	- -	550 1,000	413 650	Buies Cr. to Cape Fear R. Osgood Canal to Burgaw Cr. to N.E. Cape Fear R. to Cape Fear R. Rileys Cr. to Long Cr. to N.E. Cape Fear R. to Cape Fear River
Rook Packing Co.	-	-	P	I.W.	0.003	None	-	618	618	
Pender Packing Co.	-	-	P	I.W.	0.003	None	-	765	765	Morgan Cr. to N.E. Cape Fear R. to Cape Fear R. Cape Fear River
Carolina Beach - - Summer - Winter	- 1,080 -	10,000 1,060	M M	D.S. D.S.	1.000 0.011	None None	- -	10,000 1,060	10,000 1,060	

CAPE FEAR RIVER BASIN
MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treat- ment	Design Capa- city M.G.D.	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream and Interconnecting Streams to Main Stream
Clinton and Lundy Packing Co.	4,414	3,000	M	D.S.& I.W.	0.443	None	-	6,400	6,400	Dollar Br. to Mill Br. to Great Coharie Cr. to Coharie Cr. to Black R. to Cape Fear River
Griffin Poultry	-	-	P	I.W.	0.005	Seco	-	100	5	Great Coharie Cr. to Coharie Cr. to Black R. to Cape Fear River
Cumberland	500	260	M	D.S.	0.026	Pri.	-	260	169	Big Beaver Cr. to Little Rockfish Cr. to Rockfish Cr. to Cape Fear River
Dun Mingo Swamp Plant	6,318	3,500	M	D.S.	0.350	Pri.	-	3,500	2,275	Mingo Swp. to South R. to Black R. to Cape Fear R.
Black River Plant	-	3,500	M	D.S.& I.W.	0.371	Pri.	-	3,716	2,786	Black R. to South R. to Black R. to Cape Fear R.
Wellons Candy Co.	-	-	P	I.W.	0.017	None	-	5,600	5,600	Stoney Run to Mingo Swp. to South R. to Black R. to Cape Fear River
M. J. Hodge & Son	-	-	P	I.W.	0.002	None	-	122	122	Stoney Run to Mingo Swp. to South R. to Black R. to Cape Fear River
Elizabethtown	1,611	2,000	M	D.S.	0.020	None	-	2,000	2,000	Cape Fear River
Bladen Slaughter House	-	-	P	I.W.	0.001	None	-	44	44	Brown Cr. to Cape Fear R.
Bladen Market Abattoir	-	-	P	I.W.	0.002	Blood Trap	-	176	158	Brown Cr. to Cape Fear R.
Erwin & Erwin Mills	3,344	-	P	D.S.& I.W.	0.716	None	-	9,200	9,200	Stuarts Cr. to Cape Fear R.
Fairbank & Cates Pickle Co.	768	636	M	D.S.& I.W.	0.057	Pri.	-	1,681 (3)	1,681 (3)	Reedy Br. to Goshen Swp. to N.E. Cape Fear R. to Cape Fear River

TABLE 22

POINTS OF SIGNIFICANT SOURCES OF POLLUTION

CAPE FEAR RIVER BASIN

MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treat- ment	Design Capa- city M.G.D.	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream and Interconnecting Streams to Main Stream
Fayetteville	34,715	34,172	M	D.S.& I.W.	4.652	None	-	45,000	45,000	Cross Cr. & Atkinson Canal to Cape Fear River
Holt Williams Mfg. Co.	-	-	P	I.W.	0.047	None	-	684	684	Atkinson Canal to Cape Fear River
Underwood Poultry Co.	-	-	P	I.W.	0.023	None	-	4,500	4,500	Ditch to Cape Fear River
McDaniels Abattoir	-	-	P	I.W.	0.006	Pri.	-	580	522	Buzzard Br. to Lock Cr. to Cape Fear River
Sycamore Dairy	-	-	P	I.W.	0.091	None	-	1,850	1,850	Hybarts Br. to Branson Cr. to Blount Cr. to Cross Cr. to Cape Fear River
Fort Bragg	-	42,900	Army	D.S.	3.240	Sec.	6,750	37,300	3,300	Little River to Cape Fear River
Fort Caswell Assembly- Water Summer	- - -	12 1,000 2,000	P M M	D.S. D.S. D.S.	0.001 0.100 0.130	None Pri. Sec.	- - -	12 1,000 2,000	12 1,000 1,300	Cape Fear River Neil Cr. to Cape Fear R. Kings Cr. to Inland Waterway to Cape Fear R. Little Rockfish Cr. to Rockfish Cr. to Cape Fear River
Holly Ridge	1,998 1,084	1,084	M	D.S.	0.108	Sec.	-	1,084	976	
Hope Mills	1,077	1,500	M	D.S.	0.100	Pri.	0.400	1,500	1,050	
Brower Mills	-	200	P	D.S.	0.004	None	-	44	44	Rockfish Cr. to Cape Fear River
Kure Beach-Winter Summer	228 -	280 2,000	M	D.S.	0.028 0.200	None	-	280 2,000	280 2,000	Cape Fear River
Lilington Maulolia	1,061 585	1,200 120	M M	D.S. D.S.	0.120 0.012	None Pri.	- -	1,200 120	1,200 78	Cape Fear River Miller Cr. to Stewart Cr. to Six Run to N.E. Cape Fear R. to Cape Fear R.

POINTS OF SIGNIFICANT SOURCES OF POLLUTION

CAPE FEAR RIVER BASIN

MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Kind of Waste	Est. Gals. Waste M.G.D.	Type Treat- ment	Design Capa- city M.G.D.	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream and Interconnecting Streams to Main Stream
Moncure										
Carolina Power & Light Co.			P	I.W.	256.320	None	-	*	*	Cape Fear River
Mount Olive	3,732	2,000	M	D.S. & I.W.	0.157	Pri.	-	1,542	1,542	N.E. Cape Fear R. to Cape Fear River
Mount Olive Pickle Co.			P	I.W.	0.089	None	-	20,040	20,040	Barlow Br. to N.E. Cape Fear R. to Cape Fear R.
Navassa										
Armour Fertilizer Co.			P	D.S.	0.004	None	-	40	40	Cape Fear River
Virginia Carolina Ferti- lizer Co.			P	D.S.	0.004	None	-	35	35	Cape Fear River
Oak Island Coast Guard Station		13	C.G.	D.S.	0.001	None	-	13	13	Inland Waterway to Cape Fear River
Pinchurst Inc. (4)										
Nicks Creek Plant	1,016	800	P	D.S.	0.080	Pri.	-	800	640	Board Br. to Joes Ford to Nicks Cr. to Little R. to Cape Fear River
Raeford	2,030	3,000	M	D.S. & I.W.	0.589	Pri.	0.500	6,300	5,040	Pedlers Br. to Rockfish Cr. to Cape Fear R.
Rosboro										
Little Coharie Creek Plant	1,241	640	M	D.S.	0.064	Pri.	-	640	448	Little Coharie Cr. to Coharie Cr. to Black R. to Cape Fear River
South River Plant		500	M	D.S.	0.050	Pri.	-	500	350	Mill Cr. to South R. to Black R. to Cape Fear R.
Rose Hill	896	875	M	D.S.	0.088	Pri.	-	875	568	Canal to Island Cr. to N.E. Cape Fear R. to Cape Fear River

TABLE 22

POINTS OF SIGNIFICANT SOURCES OF POLLUTION
CAPE FEAR RIVER BASIN
MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner- ship	Kind of Waste	Est.		Type Treat- ment	Design Capa- city M.G.D.	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream and Interconnecting Streams to Main Stream
					Gals. Waste M.G.D.	Waste M.G.D.					
Calabogie - Pine land College & Edwards Military Institute	435	420	P	D.S.	0.042	None	None	-	420	420	Little Coharie Cr. to Coharie Cr. to Black R. to Cape Fear River
Sanford (5) Jonesboro Plant	10,013	2,500	M	D.S.	0.074	Sec.	Sec.	0.050	996	318	Gastons Cr. to Upper Little River to Cape Fear River
South of Pines	4,272	4,000	M	D.S.	0.400	Sec.	Sec.	1,000	4,000	800	McDeeds Cr. to Little R. to Cape Fear River
South of Fishery	1,748	1,600	M	D.S.	0.096	None	None	-	1,600	1,600	Cape Fear River
Spring Lake	3,500	3,200	P	D.S.	0.172	Sec.	Sec.	0.180	3,000	?	Inland Waterway to Cape Fear River
Sunny Point Munitions Load Terminal Wanderer Mason Plywood	-	500 (6)	Army P	D.S. D.S.	0.013 0.004	Sec. & None None	None	-	125 44	?	Cape Fear River Unnamed Tributary to Cape Fear River
Walla South Plant	1,622	600	M	D.S.	0.025	Pri.	Pri.	-	660	430	Rock Fish Cr. to N.E. Cape Fear R. to Cape Fear R.
North Plant	-	900	M	D.S.	0.038	Pri.	Pri.	-	900	810	Little Rock Fish Cr. to Rock Fish Cr. to N.E. Cape Fear R. to Cape Fear R.
Bonds Attair	-	-	P	I.W.	0.009	None	None	-	801	801	Unnamed Tributary to Rock Fish Cr. to N.E. Cape Fear R. to Cape

MAIN RIVER DRAINAGE AREA

Location	Pop. 1950	Est. Pop. Served	Owner-ship	Kind of Waste	Est. Gals. Waste M.C.D.	Type Treatment M.C.D.	Design Capa-city M.C.D.	Est. P.E. Before Treatment	Est. P.E. After Treatment	Receiving Stream and Interconnecting Streams to Main Stream
J.F. Stevens & Co. Carter Fabrics Div.	"	"	P	I.W.	0.198	Lagoon	-	6,200 ⁽⁷⁾	4,300 ⁽⁷⁾	Little RockFish Cr. to RockFish Cr. to N.E. Cape Fear R. to Cape Fear R. to Little RockFish Ditch to Little RockFish Cr. to RockFish Cr. to N.E. Cape Fear R. to Cape Fear River
Wallace Pickle Co.	"	"	P	I.W.	0.001	None	"	?	?	Fear R. to Little RockFish Cr. to RockFish Cr. to N.E. Cape Fear R. to Cape Fear River
Warsaw	2,000	1,600	M	D.S.	0.160	Pri	-	1,600	1,040	Stewarts Cr. to Six Run to N.E. Cape Fear R. to Cape Fear River
Wilmington	45,043	44,700	M	D.S.	4.500	None	-	44,700	44,700	Smiths Cr. N.E. Cape Fear R. and Cape Fear R.
Timmie Mfg. Co.	"	"	P	I.W.	0.051	Lagoon	-	1,430	1,144	Smiths Cr. to N.E. Cape Fear R. to Cape Fear R.
Swift and Co.	"	"	P	D.S. & I.W.	0.163	None	-	58	33	N.E. Cape Fear R. to Cape Fear River
Wilmington Packing Co.	"	"	P	I.W.	0.082	Grease Removal	-	4,818	3,850	Prince George Cr. to N.E. Cape Fear R. to Cape Fear River
Ward's Sausage Co.	"	"	P	I.W.	0.024	Grease Removal	-	4,000	3,200	Smiths Cr. to N.E. Cape Fear R. to Cape Fear River
Carolina Power & Light Co. Sutton Steam Plant	"	"	P	I.W.	181.440	None	-	*	*	Cape Fear River
Wrightsville Beach. Winter Summer	711	982	M	D.S.	0.098	Pri with Cl ₂	0.600	982	638	Moore Inlet to Atlantic Ocean
	"	27,000			2.700			27,000	21,600	

* For B.O.D. exerted, cooling water only.
 (1) Classified information.
 (2) Trailers in court, population irregular. part of sewage in underground drains.
 (3) Entire plant being bypassed.
 (4) The plant in Lumber River Basin.

(5) Spring Lane Plant in Deep River Drainage Area.
 (6) Average population served during heavy loading months.
 (7) Data obtained in 1957.

Drainage Area (sq. mi.)

Station 169A - Located on Watson's Lake at Broadway at bathing area.

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5-Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	Drainage Area (sq. mi.)
1-55																	
5-16	M	1600	-	20	100	8	7.5	0	15	10	5	8.1	88	3.9	-	430	
6-16	Th	0855	-	23	95	15	6.8	0	8	20	5	8.1	93	2.1	-	9,300	
7-25	M	1900	-	31	100	10	7.1	0	13	10	4	8.7	116	3.5	-	1,500	
8-16	T	1600	-	28	140	15	7.3	0	12	24	10	9.0	114	4.4	-	930	
8-18	Th	1800	-	27	160	25	7.5	0	14	12	6	9.0	111	4.8	-	1,500	
Average			-	26	120	15	6.8 to 7.5	0	12	15	6	8.6	104	3.7	-	2,700	

Station 169A₁ (Old W22) - Located on Lick Creek at Sanford's intake.

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5-Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	Drainage Area (sq. mi.)
1-54																	
9-8	W	1700	-	28	55	15	7.2	0	21	19	4	8.2	104	2.3	-	300	
10-5	T	1645	-	27	55	10	8.0	0	28	55	7	9.4	116	2.2	-	93	
10-12	T	0935	-	23	80	6	7.4	0	26	24	6	8.7	100	1.9	-	730	
Average			-	26	65	10	7.2 to 8.0	0	25	33	6	8.8	107	2.1	-	370	

Station 169A₂ - Located on Lake Williams at Sanford's intake.
(Old W20)

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5-Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	Drainage Area (sq. mi.)
9-8	W	1730	-	29	29	3	7.2	0	25	15	4	7.7	99	2.9	-	93	
10-5	T	1720	-	20	70	15	9.8	13	28	33	5	14	157	8.2	-	940	
10-12	T	0830	-	22	60	10	6.6	0	23	20	4	5.7	65	2.4	-	43,000	
Average			-	24	55	9	6.6 to 9.8	4	25	23	4	9.1	107	4.5	-	15,000	

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 170 (Composite 3 Point Station) - Located on Cape Fear River 12.6 miles below confluence of Deep River and Haw River and below Buckhorn Dam. Drainage Area (sq. mi.) 3,350

Date Col-lected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M. P. N. per 100 ml.
1954															
8-17	T	1045	123	30	60	20	8.4	3	46	33	9.7	128	2.2	1,800	860
8-30	M	1320	220	30	60	30	8.3	2	45	44	8.1	107	1.5	2,200	95
9-17	F	0835	62	24	55	25	7.7	0	85	65	6.2	73	1.0	420	150
9-23	Th	0615	83	21	55	15	7.6	0	90	40	5.6	62	1.3	730	420
9-29	W	1615	83	27	42	7	8.3	0	89	27	8.1	100	1.0	560	240
Average			114	26	55	20	7.6 to 8.4	1	71	42	7.5	94	1.4	1,200	350

NOTE: Water is subject to upstream regulation at Carolina Power & Light Company Buckhorn Hydro Station.

Station 170 - Located on Cape Fear River 12.6 miles below confluence of Deep River and Haw River and below Buckhorn Dam. Drainage Area (sq. mi.) 3,350

Date Col-lected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M. P. N. per 100 ml.
1955															
5-26	Th	1220	2,000	20	880	240	7.6	0	32	22	6.6	72	1.7	23,000	4,300
6-2	Th	1005	750	23	500	80	7.5	0	35	34	7.4	85	1.4	7,100	91
6-28	T	0915	750	23	640	200	7.2	0	35	38	7.9	90	2.2	11,000	430
7-25	M	1720	1,300	30	980	160	7.2	0	20	16	6.0	79	2.4	21,000	2,400
9-14	W	1400	1,200	24	280	40	6.9	0	17	24	7.2	85	1.5	12,000	430
Average			1,200	24	660	140	6.9 to 7.6	0	28	27	7.0	82	1.8	15,000	1,500

MAIN RIVER DRAINAGE AREA

Station 171 - Located on Cape Fear River 5.6 miles below Station 170 and above
(3 Point Sta.) pollution in Neils Creek from Fuquay Springs. Drainage Area (sq. mi.) 3,430

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
							Range	ppm	Total ppm	ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
5-12	Th	1215	650	21	100	10	8.2	0	35	34	34	6	8.7	97	3.2	14,000	1,800
6-2	Th	1110	540	23	430	120	7.4	0	31	38	38	9	7.3	84	1.6	5,800	36
6-28	T	1120	540	25	440	160	7.2	0	36	24	24	11	8.0	95	1.2	4,400	1,100
7-26	T	0905	540	29	620	120	7.0	0	19	18	18	5	5.9	76	1.4	5,100	6,700
9-14	W	1455	1,850	23	260	30	6.7	0	16	22	22	7	7.5	86	0.9	11,000	1,200
Average			820	24	380	90	6.7 to 8.2	0	27	27	27	8	7.5	88	1.7	8,100	2,200

Station 172 - Located on Kenneth Branch above pollution from Fuquay Springs
in Kenneth Branch. Drainage Area (sq. mi.) 5.58

5-11	W	0925	0.2	19	120	15	6.5	0	101	16	16	5	11.3	120	2.0	3	2,400
5-26	Th	1010	0.2	20	170	20	7.2	0	43	12	12	4	6.9	75	0.5	1	1,500
6-28	T	1305	0.2	20	280	120	7.0	0	20	24	24	5	9.2	100	1.1	1	9,300
7-25	M	1505	2.7	24	880	200	6.6	0	8	8	8	8	7.4	87	3.3	60	43,000
8-26	F	0710	4.2	21	120	6	6.5	0	8	8	8	6	8.1	90	1.0	28	2,400
Average			1.5	21	320	70	6.5 to 7.2	0	36	14	14	6	8.6	94	1.6	19	12,000

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 173 - Located on Kenneth Creek above domestic sewage effluent outfall at Fuquay Springs and below storm drainage from town. Drainage Area (sq. mi.) 3.98

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
5-11	W	0955	0.01	19	380	30	6.5	0	52	66	49	4.2	45	4.4	1	4,300
5-26	Th	1025	0.08	21	210	20	7.0	0	59	58	15	3.8	42	2.4	1	15,000
6-28	T	1335	0.01	21	240	40	6.8	0	38	50	16	7.5	83	1.3	1	15,000
7-25	M	1520	0.3	25	420	55	6.8	0	35	48	20	6.0	71	1.9	4	43,000
8-26	F	0730	0.9	21	170	15	7.1	0	27	28	10	6.5	72	1.2	7	9,300
Average			.3	21	280	30	6.5 to 7.1	0	42	50	22	5.6	63	2.2	3	17,000

Station 174 - Located on Kenneth Creek below domestic sewage effluent outfall from Fuquay Springs. Drainage Area (sq. mi.) 4.14

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
5-11	W	1010	1.5	20	440	30	6.8	0	201	84	41	0.0	0	130	1,300	2,400,000
5-26	Th	1045	0.5	20	260	40	6.9	0	150	120	55	0.0	0	140	470	24,000,000
6-28	T	1400	0.25	22	340	80	7.0	0	139	90	44	0.2	2	150	250	24,000,000
7-25	M	1545	1.4	25	340	35	6.8	0	67	64	23	2.7	32	27	260	36,000
8-26	F	0745	3.1	22	130	8	6.5	0	33	30	11	4.6	52	85	180	430,000
Average			1.4	22	300	40	6.5 to 7.0	0	118	78	35	1.5	17	110	490	10,000,000

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 175 - Located on Kenneth Creek 4.3 miles below Station 174 on Kenneth Branch Drainage Area (sq. mi.) 13.5 and below all pollution from Fuquay Springs.

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	Coliform
5-11	W	1025	1.5	20	100	20	6.8	0	32	24	13	5.9	64	4.3	44	15,000	
5-26	Th	1100	1.8	20	120	10	7.1	0	34	22	9	4.7	51	4.9	60	2,300	
6-28	T	1220	1.5	20	160	25	7.0	0	26	30	13	6.6	72	4.4	45	7,300	
7-25	M	1615	7.2	26	400	40	6.7	0	17	24	11	5.8	71	4.9	240	43,000	
8-26	F	0815	9.0	22	130	10	6.5	0	16	20	8	6.7	76	1.9	120	9,300	
Average			4.2	22	180	20	6.5 to 7.1	0	25	24	11	5.9	67	4.1	100	15,000	

Station 176 - Located on Neils Creek below pollution from Fuquay Springs and 0.6 of a mile from Cape Fear River.

5-12	Th	1100	3.5	20	80	6	7.2	0	15	14	6	8.3	90	0.2	5	1,500
6-2	Th	1410	5.0	24	290	55	6.9	0	15	24	7	8.3	98	2.4	81	430
6-29	W	0930	1.4	19	70	10	6.7	0	14	24	11	8.1	86	0.8	8	230
7-26	T	0735	27	24	340	50	6.7	0	12	14	5	6.8	80	1.4	260	9,300
8-26	F	0845	56	22	130	10	6.4	0	12	20	5	7.4	84	1.1	420	930
Average		19	22	22	180	25	6.4 to 7.2	0	14	19	7	7.8	88	1.2	150	2,500

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 177 - Located on Cape Fear River above untreated domestic sewage
(3 point Sta.) outfall from Lillington.

Drainage Area (sq. mi.) 3,440

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1955																
5-12	Th	1045	667	21	90	20	8.0	0	35	28	6	9.5	106	2.5	1,100	24,000
6-2	Th	1320	529	23	-	-	7.3	0	35	28	9	7.3	84	1.7	6,100	230
6-29	W	0835	503	25	580	180	7.2	0	35	26	11	7.0	83	0.9	3,100	390
7-26	T	0653	497	28	640	100	7.0	0	19	16	5	5.9	75	1.0	3,400	120,000
9-14	W	1127	2,000	23	260	30	7.0	0	19	36	8	7.4	85	0.7	9,500	4,200
Average			839	24	400	80	7.0 to 8.0	0	29	27	8	7.4	87	1.4	4,600	30,000

Station 178 - Located on Cape Fear River below untreated domestic sewage
(3 point Sta.) outfall from Lillington.

Drainage Area (sq. mi.) 3,440

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1955																
5-12	Th	1040	667	21	100	10	8.5	1	36	30	7	10.6	106	3.4	15,000	15,000
6-2	Th	1345	529	23	420	100	7.3	0	35	38	9	7.2	83	1.3	4,600	720
6-29	W	0855	503	25	540	200	7.2	0	35	30	11	6.8	81	1.4	4,800	6,200
7-26	T	0723	497	28	640	80	7.0	0	19	16	5	5.9	73	1.1	3,700	5,000
9-14	W	1142	2,000	23	260	35	6.8	0	17	28	8	7.3	84	0.8	11,000	8,800
Average			839	24	400	85	6.8 to 8.5	0 usually	28	28	8	7.6	85	1.6	7,800	7,100

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 179 - Located on Buies Creek above sewage effluent outfall from Campbell College and community of Buies Creek.															Drainage Area (sq. mi.) 7.29			
Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	Dissolved O ₂ %	5 Day B.O.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.	Coliform
								Phenol ppm	Phenol Tot. ppm	Mineral ppm	Tot. ppm							
1955																		
5-16	M	1530	0.6	20	150	12	8.4	2	15	-	-	15	7	9.0	2.0	8	7,500	
6-2	Th	1225	0.4	25	180	15	6.7	0	45	-	-	24	8	7.9	1.6	4	930	
6-29	W	1045	0.2	21	140	20	4.2	-	-	Negligible		28	7	7.0	1.4	2	9,300	
7-29	F	0705	3.2	24	180	10	6.6	0	12	-	-	20	6	8.2	2.4	52	4,300	
9-14	W	0910	9	19	160	5	6.5	0	8	-	-	20	10	8.1	1.7	100	360	
Average			2.7	22	160	10	4.2 to 8.4	0 to usually	20	-	-	21	8	8.0	1.8	33	4,500	
Station 180 - Located on Buies Creek below sewage effluent outfall from Campbell College and community of Buies Creek.															Drainage Area (sq. mi.) 26.0			
5-16	M	1500	1.0	20	120	5	7.0	0	15	-	-	15	8	9.5	1.8	12	2,300	
6-2	Th	1210	0.8	24	130	15	6.7	0	10	-	-	24	8	7.8	1.1	6	3,600	
6-29	W	1025	0.5	20	130	15	7.3	0	21	-	-	16	7	8.3	0.5	2	4,300	
7-29	F	0640	5.5	25	160	7	6.5	0	12	-	-	20	7	6.3	3.8	140	9,300	
9-14	W	0855	37	19	180	6	6.5	0	9	-	-	22	11	7.7	1.2	300	9,300	
Average			9.0	22	140	10	6.5 to 7.3	0	13	-	-	19	8	7.9	1.7	92	5,800	

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 181 - Located on Cape Fear River above confluence with Upper Little River. Drainage Area (sq. mi.) 3,470

Date Collected 1955	Day	Time	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. lbs/day 20°C
6-29	W	1257	520	26	260	20	7.4	0	44	0	11	8.0	98	1.2
7-29	F	0955	576	31	460	65	6.9	0	19	-	7	6.0	80	0.9
9-1	Th	1430	4,100	26	380	65	6.7	0	15	-	5	6.7	82	3.3
														4,200
														3,500
														91,000

Date Collected 1955	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulphide ppm	Formaldehyde ppm	Fluoride ppm
6-29	W	1257	1,200	0	0	4.05	.6
7-29	F	0955	5,000	-	-	-	-
9-1	Th	1430	24,000	-	-	-	-

Station 182 - Located on Upper Little River above affluent from Jonesboro-Sanford

sewage and industrial waste plant on Casters Creek.

Drainage Area (sq. mi.) 18.8

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	Coliform M.F.C. per 100 ml.
1955														
5-11	W	1425	1.4	22	95	8	6.5	0	27	20	6	8.2	3.6	2,100
6-3	F	0915	1.6	18	210	20	6.6	0	20	12	4	7.9	1.8	2,100
6-16	Th	1125	0.4	18	90	7	6.5	0	9	10	4	7.0	1.2	2,400
7-27	W	0725	0.8	24	180	15	6.6	0	14	16	5	5.2	2.6	4,300
8-16	T	1700	4.0	26	180	20	6.5	0	10	20	8	6.7	1.7	4,300
Average			1.6	22	150	15	6.5 to 6.6	0	16	16	5	7.0	2.2	3,200

Station 183 - Located on unnamed tributary to Gasters Creek below old Jonesboro-Sanford sewage treatment plant, now abandoned.

Drainage Area (sq. mi.) .28

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1955															
5-11	W	1400	0.4	25	-	-	7.0	0	127	22	0	35	0.0	0	270
6-3	F	0845	0.25	21	120	20	7.1	0	76	32	0	19	3.6	40	73
6-16	Th	1045	0.25	25	360	50	7.3	0	166	60	0	33	1.5	18	240
7-27	W	0645	0.35	23	90	6	6.6	0	45	26	0	15	2.4	28	-
8-16	T	1625	0.4	28	320	40	7.0	0	109	58	0	29	1.1	14	160
Average			0.33	24	220	30	6.6 to 7.3	0	105	40	0	26	1.7	20	190

Date	Day	Time	Coliform M.P.N. per 100 ml.	Cyanide ppm
1955				
5-11	W	1400	<3,600#	.03
6-3	F	0845	2,400,000	<.05
6-16	Th	1045	93,000,000	<.05
7-27	W	0645	430,000	8
8-16	T	1625	<36,000#	<.05
Average			32,000,000	

#Excluded from average-indeterminate.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 184 - Located on Gasters Creek below effluent outfall from old Jonesboro-Sanford sewage plant, now abandoned, and 2.1 miles below Station 183.

Drainage Area (sq. mi.) 4.36

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D.O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
							Range	ppm	Total ppm	Phenol. ppm			ppm	% Sat.		
5-11-1955	W	1410	1.3	25	47	10	7.0	0	45	0	24	7	7.5	89	8.4	24,000
6-3	F	0900	1.2	17	120	20	6.2	0	38	0	26	7	7.7	79	-	620
6-16	Th	1105	0.7	18	50	10	6.8	0	27	0	24	8	8.5	89	1.3	4,300
7-27	W	0710	1	23	130	10	7.0	0	41	0	20	11	6.2	71	2.9	24,000
8-16	T	1645	3.1	25	110	10	6.8	0	21	0	34	12	6.6	79	1.7	24,000
Average			1.5	22	90	10	6.2 to 7.0	0	34	0	26	9	7.3	81	3.6	15,000

Station 185 - Located on Upper Little River below confluence with Gasters Creek containing effluent from Jonesboro-Sanford treatment plant.

Drainage Area (sq. mi.) 43.0

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D.O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
							Range	ppm	Total ppm	Phenol. ppm			ppm	% Sat.		
5-11	W	1445	14	22	70	15	6.8	0	19	0	20	6	9.1	103	3.2	910
5-17	T	1430	26	21	140	3	7.5	0	24	0	14	4	8.1	90	0.2	1,500
6-3	F	0818	4	18	140	20	6.7	0	25	0	14	4	8.3	87	1.4	910
6-16	Th	0955	2.0	18	70	20	7.0	0	21	0	20	6	8.5	85	0.7	4,300
7-27	W	0620	3.6	24	140	7	6.8	0	22	0	22	8	6.2	73	2.0	2,300
8-16	T	1715	21	25	180	20	6.5	0	17	0	34	13	6.8	81	2.5	2,300
Average			12	21	120	15	6.5 to 7.5	0	21	0	21	7	7.8	87	1.7	2,000

MAIN RIVER DRAINAGE AREA

Station 185A - Located on Upper Little River above temporary wash water effluent from Becker County Sand and Gravel Company. Drainage Area (sq. mi.) 197

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
								Phenol. ppm	Total ppm			% Sat.	ppm 25°C		
1915															
6-1	W	0930	66	20	190	20	7.8	0	12	20	4	6.9	75	2.0	210
7-27	W	1130	116	26	180	10	6.5	0	6	24	5	5.8	71	1.3	9,300
8-16	T	1515	186	26	160	10	6.5	0	7	14	9	6.1	74	0.9	4,300
9-1	Th	1730	undefined* 24 est.*	24 est.*	180*	20*	6.7*	0*	15*	16*	6*	5.4*	64*	1.4*	4,300*
Average			123	24	180	15	6.5 to 7.8	0	8	19	6	6.3	73	1.4	4,600

* Excluded from average as high flow discharge was undefined.

Station 186 - Located on Upper Little River 4.6 miles below Station 185A and 2.2 miles from confluence with Cape Fear River. Drainage Area (sq. mi.) 210

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
								Phenol. ppm	Total ppm			% Sat.	ppm 25°C		
6-1	W	1000	57	22	4,200	1,100	5.3	0	5	16	4	7.8	89	1.3	2,400
7-1	F	0600	23	23	4,600	1,600	6.5	0	7	24	6	7.5	86	0.3	7,300
7-29	F	0750	55	26	920	350	6.5	0	10	16	6	6.6	80	1.2	3,000
9-1	Th	1225	undefined* 24*	24*	500*	80*	5.6*	0*	7*	16*	5*	6.2*	73*	1.9*	24,000*
Average			45	24	3,200	1,000	5.3 to 6.5	0	7	19	5	7.3	85	0.9	4,200

* Excluded from average as high flow discharge was undefined.

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 187 - Located on Cape Fear River at Dunn water intake and above untreated sewage and industrial waste from Erwin and Erwin Mills in Stuart Creek.

Drainage Area (sq. mi.) 3,690

Date Collected	Day Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1955														
5-17	T 1300	990	21	-	-	8.9	6	24	0	8	8.7	97	1.0	6,700
6-1	W 1130	700	25	560	100	6.6	0	26	-	7	7.3	87	2.2	10,000
7-1	F 0740	420	25	520	100	7.0	0	34	0	13	7.1	85	1.9	5,400
7-29	F 1125	400	30	480	110	7.0	0	20	0	6	6.3	83	1.0	2,700
8-18	Th 1645	undefined*	24*	1,660*	370*	7.5*	0*	12*	0*	6*	6.4*	75*	3.4*	-
8-24	W 1725	undefined*	26*	420*	50*	6.9*	0*	20*	0*	3*	6.4*	78*	5.4*	-
Average		630	25	520	100	6.6 to 8.9	0 usually	26	0	9	7.4	88	1.5	6,200

Date Collected	Day Time	Coliform M.P.N. per 100 mL.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm	Fluoride ppm
1955						
5-17	T 1300	2,100	<4.05#	0	0	.25
6-1	W 1130	730	-	-	-	-
7-1	F 0740	2,400	0	0	<.05	.2
7-29	F 1125	4,300	0	0	0	.2
8-18	Th 1645	43,000*	0*	0*	0*	<.1*
8-24	W 1725	4,300*	0*	0*	0*	<.1*
Average		2,400	0 usually	0	0 usually	.2

* Excluded from average as high flow discharge was undefined.
Excluded from average-indeterminate

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi) 13.4

Station 188 - Located on Stuart Creek above waste from Moore Dairy.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. % ppm	5 Day B.O.D. lbs/day 20°C	M.P.N. per 100 ml.
1955													
5-16	M	1410	2.0	20	180	8	6.5	0	16	14	8.3	0.7	430
6-1	W	1300	0.2	20	260	15	5.6	0	5	18	8.4	4.9	9,300
7-1	F	0808	0.2	20	170	20	6.6	0	10	20	8.5	0.4	4,300
7-29	F	1145	20	27	240	10	7.3	0	19	20	6.6	1.4	24,000
9-1	Th	1610	51	-	210	8	4.9	0	4	18	5.4	1.9	930
Average			15	22	210	10	4.9 to 7.3	0	11	18	7.4	1.9	7,800

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 189 - Located on Stuart Creek below waste from Moore Dairy and above sewage and industrial waste from Erwin and Erwin Mills. Drainage Area (sq. mi.) 14.0

Date Col-lected 1955	Day Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Total. ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
5-16	M 1350	13	20	-	-	6.6	0	7	0	0	6	9.0	98	0.6	53
6-1	W 1145	0.5	23	-	-	6.5	0	6	0	0	7	7.9	91	3.4	12
7-1	F 0755	1.3	21	130	7	6.5	0	12	0	0	9	4.6	51	0.8	7
7-29	F 1200	23	25	220	7	6.7	0	16	0	0	8	6.6	79	7.2	1,100
9-1	Th 1600	50	-	210	15	5.6	0	16	0	0	8	6.5	-	1.8	610
Average		18	22	190	10	5.6 to 6.7	0	11	0	0	8	6.9	80	2.8	360

Date Col-lected 1955	Day Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
5-16	N 1350	910	<.05	0	0
6-1	W 1145	9,100	-	-	-
7-1	F 0755	43,000	<.05	0	.14
7-29	F 1200	4,300	-	0	-
9-1	Th 1600	15,000	0	0	0
Average		14,000	<.05	0	.05

YAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 15.6

Station 190 - Located on Stuart Creek below untreated sewage and industrial waste from Erwin and Erwin Mills.

Date Col-lected	Day Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium		Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	lbs/day 25°C
							Phenol. ppm	Tot. ppm		Hex. ppm	Tot. ppm		ppm	% Sat.		
5-16	M 1335	14	23	-	-	9.6	76	181	16	0	-	72	0.0	0	69	6,500
6-1	W 1120	1.6	29	-	-	10.2	260	600	60	-	-	200	0.0	0	180	1,900
7-1	F 0725	2	25	280	10	7.2	0	140	80	0	1.0	101	0.7	8	250	3,400
7-29	F 1105	24	30	260	10	7.2	0	75	40	0	0	83	1.0	13	93	15,000
9-1	Th 1535	47	-	210	17	6.6	0	17	16	0	0	12	5.5	-	8.8	2,800
Average		18	27	250	10	6.6 to 10.2	67	203	42	0	.3	94	1.4	5	120	5,900

Date Col-lected	Day Time	Coliform M.P.N. per 100 ml.	Cyanide ppm	Sulfide ppm	Formaldehyde ppm	Grease ppm
5-16	M 1335	430,000	0	0	-	26.8
6-1	W 1120	>110,000#	-	0	-	-
7-1	F 0725	2,400,000	0	.4	.14	-
7-29	F 1105	24,000,000	<.05#	0	0	-
9-1	Th 1535	430,000	0	0	0	44
Average		6,800,000	0	.1	.05	-

Excluded from average-indeterminate.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 191 -- Located on Cape Fear River 0.6 of a mile below mouth of Stuart Creek, Drainage Area (sq.mi.) 3,730 containing waste from Erwin and Erwin Mills.

Date Collected 1955	Day	Time	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D.O. % Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
5-17	T	1045	1,000	20	--	--	8.9	2	38	0	8	92	1.1	7,400
6-1	W	1025	700	21	400	110	7.2	0	33	0	8	83	3.5	17,000
7-1	F	0615	420	25	360	100	7.1	0	32	0	12	86	2.2	6,200
7-29	F	0845	450	29	460	60	7.0	0	19	--	7	79	2.5	7,600
9-1	Th	1230	3,000	22	360	50	6.3	0	11	0	7	76	2.0	41,000
9-13	T	1440	2,200	22	240	30	6.2	0	15	0	3	86	1.6	24,000
9-20	T	1425	1,900	22	400	20	7.3	0	19	0	5	89	1.7	22,000
Average			1,400	23	380	60	6.3 to 8.9	usually	24	0	7	84	2.1	18,000

Date Collected 1955	Day	Time	Coliform M.P.N. per 100 mL	Cyanide ppm	Sulfide ppm	Formaldehyde ppm
5-17	T	1045	5,300	<.05#	--	0
6-1	W	1025	4,300	<.05#	0	0
7-1	F	0615	93,000	.06	0	.07
7-29	F	0845	140,000	--	--	--
9-1	Th	1230	43,000	0	0	0
9-13	T	1440	4,300	0	0	0
9-20	T	1425	24,000	0	0	0
Average			45,000	.02	0	.01

MAIN RIVER DRAINAGE AREA

Station 192 - Located on Joe's Fork above confluence with Board Creek containing treated domestic sewage from Pinehurst. Drainage Area (sq. mi.) 3.37

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D.O.		5 Day B.O.D. lbs/day 25°C	M.P.N. per 100 ml.
							Range	Phenol. ppm	Total ppm				ppm	% Sat.		
5-18	W	1140	3.5	19	120	3	6.2	0	6		4	3	7.4	79	0.6	1,100
5-31	T	0920	3.4	18	-	-	5.8	0	7		4	2	7.0	74	3.4	240
7-8	F	0555	5.4	22	160	20	5.4	0	2		24	4	6.7	76	0.8	4,300
7-28	Th	1355	1.7	26	110	6	5.3	0	12		4	2	6.8	83	1.3	430
8-25	Th	1340	3.4	22	120	3	5.5	0	14		12	3	6.9	78	0.6	9,300
Average			3.5	21	130	8	5.3 to 6.2	0	8		10	3	7.0	78	1.3	3,100

Station 193 - Located on Board Creek below primary treated domestic sewage from Pinehurst's northside plant. Drainage Area (sq. mi) .96

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D.O.		5 Day B.O.D. lbs/day 25°C	M.P.N. per 100 ml.
							Range	Phenol. ppm	Total ppm				ppm	% Sat.		
5-18	W	1125	1.6	19	65	2	6.9	0	19		18	9	3.9	41	3.8	4,300
5-31	T	0905	0.65	17	190	20	6.5	0	14		10	7	4.7	48	3.5	9,300
7-8	F	0640	0.85	20	70	7	5.5	0	3		16	6	6.8	74	1.0	7,500
7-28	Th	1550	0.65	24	45	2	6.1	0	10		14	8	6.5	76	1.6	4,300
8-25	Th	1350	2	21	95	10	5.5	0	10		18	7	6.5	72	0.8	43,000
9-27	T	1600	2	19	60	2	6.8	0	6		10	15	5.4	57	1.2	24,000
10-5	W	1600	2	20	90	3	6.6	0	9		20	15	6.9	75	1.2	430
Average			1.4	20	90	7	5.5 to 6.9	0	10		15	10	5.8	63	1.9	13,000

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 193A - Located on Board Creek at ford on wood trail upstream from the sewage outfall ditch for Pinehurst.															
Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	5 Day B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
							ppm	ppm	ppm	ppm					
9-27	T	1500	-	19	90	6	6.6	0	29	20	9	6.5	69	1.3	43
10-5	W	1530	-	20	44	6	6.9	0	5	10	2	7.3	83	0.4	15
Station 193B - Located on Board Creek taken 50' downstream from sewage outfall ditch for Pinehurst.															
9-27	T	1530	-	19	100	10	6.5	0	4	28	16	3.9	41	9.7	930,000
10-5	W	1545	-	20	65	6	6.6	0	27	34	16	6.5	71	3.9	4,300
Station 194 - Located on Rattlesnake Creek at Pinehurst's upper water intake above old filter plant.															
5-18	W	1100	-	20	49	2	5.4	0	2	2	4	9.0	98	0.6	93
5-31	T	1015	-	19	65	7	5.8	0	5	0	4	8.6	91	0.5	930
7-8	F	0610	-	19	47	10	5.1	0	1	10	4	7.6	81	0.4	2,100
7-28	Th	1310	-	25	37	2	5.6	0	7	2	2	7.9	94	0.9	1,500
8-22	M	1625	-	24	35	6	5.4	0	8	8	6	9.5	112	1.8	150
8-25	Th	1410	-	21	55	3	5.5	0	3	8	3	8.7	97	0.9	2,400
Average			-	21	48	5	5.1 to 5.8	0	4	5	4	8.6	96	0.9	1,200

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 195 - Located on Rattlesnake Creek at Pinehurst's lower water intake above new filter plant and 0.4 of a mile downstream from Station 194. Drainage Area (sq. mi.) .48

Date Collected 1955	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
5-18	W	1110	-	20	55	3	6.1	0	6	2	4	9.2	100	0.6	-	93
5-31	T	1020	-	19	110	7	5.8	0	5	0	4	9.2	98	1.0	-	2,400
7-8	F	0620	-	20	55	7	5.1	0	1	10	5	8.4	91	0.4	-	730
7-28	Th	1320	-	25	50	2	6.0	0	7	4	2	8.2	98	1.0	-	210
8-22	M	1635	-	25	35	10	5.6	0	6	4	7	8.1	96	0.9	-	91
8-25	Th	1420	-	21	65	6	5.2	0	2	8	2	8.0	89	0.5	-	930
Average			-	22	60	6	5.1 to 6.1	0	5	5	4	8.5	95	0.7	-	740

Station 196 - Located on Joe's Fork below mouth of Board Creek containing primary treated domestic sewage from Pinehurst's northside plant. Drainage Area (sq. mi.) 5.80

5-18	W	1145	6.6	19	150	2	5.5	0	3	40	6	5.0	53	1.6	71	-
5-31	T	0930	8.2	18	220	20	5.7	0	4	6	4	4.1	43	1.7	94	4,300
7-8	F	0650	6.6	24	120	6	5.3	0	3	10	4	5.3	62	1.6	71	430
7-28	Th	1420	2.1	29	110	3	5.8	0	10	10	3	5.0	64	0.6	9	4,300
8-25	Th	1605	11	23	160	5	5.4	0	14	12	3	5.5	63	1.2	89	2,400
Average			6.9	23	150	7	5.3 to 5.8	0	7	16	4	5.0	57	1.3	67	2,900

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 197 - Located on Nick's Creek 0.6 of a mile below mouth of Joe's Fork and below primary treated domestic sewage from Pinehurst's northside plant. Drainage Area (sq. mi.) 20.5

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 mL
5-18	W	1200	16	19	120	3	6.0	0	5	20	4	7.6	81	0.6	65	-
5-31	T	0945	18	17	210	10	5.2	0	2	4	5	7.2	74	1.5	180	930
7-8	F	0700	10	23	180	15	5.5	0	3	6	5	6.9	79	1.6	108	2,400
7-28	Th	1440	4.5	26	140	3	6.0	0	9	6	3	6.7	82	1.6	49	1,500
8-25	Th	1625	25	22	140	5	4.8	0	5	8	2	6.8	77	1.1	190	2,400
Average			15	21	160	7	4.8 to 6.0	0	5	9	4	7.0	79	1.3	120	1,800

Station 198 - Located on unnamed tributary to Nicks Creek at site of possible auxiliary water supply for Southern Pines. Drainage Area (sq. mi.) 2.20

5-18	W	1300	-	18	70	2	5.3	0	4	0	3	6.8	72	0.6	-	93
5-31	W	1000	-	19	60	10	4.9	0	2	0	2	6.5	69	0.9	-	430
7-8	F	0715	-	23	47	6	5.0	0	1	2	3	7.5	86	0.4	-	93
7-28	Th	1510	-	28	60	3	5.4	0	7	6	3	6.9	87	0.6	-	240
8-22	M	1600	-	26	80	6	5.0	0	8	4	8	5.8	71	0.9	-	230
Average			-	23	65	5	4.9 to 5.4	0	4	2	4	6.7	77	0.7	-	220

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 199 - Located on Little River as control above waste in Mill Creek. Drainage Area (sq. mi.) 77.1

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH		Alkalinity		Acidity		Hardness		Chloride ppm	D. O. %	5 Day B.O.D.		Coliform M.P.N.
							Range	ppm	ppm	ppm	ppm	ppm	as CaCO ₃	ppm			ppm	lbs/day per 100	
1955																			
5-24	T	0915	95	25	100	6	4.6	-	-	-	2	14	10	3	6.0	71	0.4	260	430
7-6	W	1345	8	25	90	6	5.6	0	5	-	-	-	10	4	7.0	83	0.7	38	4,300
9-16	F	1707	82	22	120	6	6.6	0	8	-	-	-	6	5	7.1	81	1.1	610	430
Average			62	24	100	6	4.6 to 6.6	-	-	-	-	-	9	4	6.7	78	0.7	300	1,700

Station 200 - Located on Mill Creek at raw water intake for town of Southern Pines.

Drainage Area (sq. mi.) 1.90																			
5-24	T	1100	-	26	24	3	6.4	0	4	-	-	-	2	1	8.2	100	0.4	-	4,300
7-6	W	1315	-	29	27	3	5.6	0	1	-	-	-	14	4	8.0	103	1.8	-	230
7-21	Th	0900	-	29	80	25	6.0	0	-	-	-	-	4	4	7.4	95	1.9	-	1,500
8-22	M	1530	-	32	40	6	5.6	0	6	-	-	-	4	7	8.1	109	1.0	-	150
9-16	F	1635	-	24	46	3	7.8	0	8	-	-	-	4	4	9.1	107	2.8	-	240
Average			-	28	43	8	5.6 to 7.8	0	5	-	-	-	6	4	8.2	103	1.6	-	1,300

TABIE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 201 - Located on McDeeds Creek as control above effluent from sewage treatment plant for town of Southern Pines.

Drainage Area (sq. mi.) 2.24

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.	Coliform
5-24	T	1025	1.3	24	200	20	6.9	0	9	14	3	5.7	67	1.6	14	4,300	
7-6	W	1235	1.4	30	120	10	6.2	0	23	24	5	6.3	83	1.6	15	4,300	
7-21	Th	0825	5	26	220	20	6.2	0	-	12	5	5.9	72	2.5	84	4,300	
9-16	F	1600	1.6	28	210	20	6.9	0	12	10	7	7.5	95	2.4	26	9,300	
Average			2.3	27	190	20	6.2 to 6.9	0	15	15	5	6.4	79	2.0	35	5,600	

Station 202 - Located at outlet to Swans Lake used for bathing.

Drainage Area (sq. mi.) .57

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.	Coliform
5-24	T	1015	-	27	85	20	6.2	0	5	8	2	6.9	85	0.2	-	430	
7-6	W	1220	-	30	100	15	5.3	0	2	14	4	6.9	91	0.8	-	4,300	
7-21	Th	0810	-	28	80	10	5.6	0	-	6	5	5.6	71	0.9	-	1,500	
8-22	M	1515	-	32	220	35	5.8	0	6	6	7	7.4	100	0.9	-	150	
9-16	F	1550	-	26	180	20	5.6	0	7	4	6	7.0	85	2.0	-	230	
Average			-	29	130	20	5.3 to 6.2	0	5	8	5	6.8	86	1.0	-	1,300	

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 203 - Located on McDeeds Creek below effluent outfall from sewage treatment plant for town of Southern Pines. Drainage Area (sq.mi.) 4.22

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.
1955																
5-24	T	1040	6.2	22	110	7	6.1	0	4	8	5	2.5	28	1.3	54	43,000
7-6	W	1245	3.1	24	80	10	5.2	0	2	32	10	2.5	29	2.4	50	7,300
7-21	Th	0840	11	24	120	15	5.7	0	-	8	6	4.2	49	1.2	89	24,000
9-16	F	1615	4.4	23	100	8	6.6	0	8	8	10	3.4	39	4.1	120	9,300
Average			6.2	23	100	10	5.2 to 6.6	0	5	14	8	3.2	36	2.3	78	21,000

Station 204 - Located on McDeeds Creek below effluent outfall from sewage treatment plant for town of Southern Pines and 1.7 miles below Station 203. Drainage Area (sq. mi.) 7.21

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.
5-24	T	0945	11	21	110	6	5.0	0	3	10	5	4.8	53	0.6	45	4,300
7-6	W	1200	4.7	23	90	7	5.3	0	2	20	7	6.6	76	1.2	38	15,000
7-21	Th	0740	9.0	23	170	15	5.6	0	-	10	5	5.9	68	1.2	73	930,000
9-16	F	1540	7.3	21	100	5	5.5	0	7	8	8	7.0	78	1.1	54	4,300
Average			8.0	22	120	8	5.0 to 5.6	0	4	12	6	6.1	69	1.0	53	240,000

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 205 - Located on Mill Creek below McDeeds Creek containing effluent from Southern Pines sewage treatment plant and above Crystal Lake.

Drainage Area (sq. mi.) 16.2

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
5-24	T	0930	18	21	100	5.6	0	6	4	6.5	72	0.2	24	430
7-6	W	1145	6.0	25	80	5.3	0	14	7	7.6	90	1.2	49	4,300
7-21	Th	0730	14	23	180	5.6	0	10	6	6.6	76	1.2	110	240,000
9-16	F	1530	17	20	100	5.5	0	6	8	7.5	82	1.2	140	4,300
Average			14	22	120	5.3 to 5.6	0	9	6	7.1	80	1.0	81	62,000

Station 206 - Located at outlet to Crystal Lake which is used for bathing.

Drainage Area (sq. mi.) 20.3

Date	Day	Time	Discharge cfs	Temp. °C	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
5-24	T	0905	40	26	110	6.8	0	5	3	8.5	104	2.1	570	9,300
7-6	W	1120	28	28	140	6.5	0	20	6	8.5	108	7.3	1,400	2,300
7-21	Th	0715	1.8	28	90	6.8	0	8	7	8.1	95	2.4	29	43,000
8-22	M	1440	8.3	32	120	6.3	0	10	8	8.4	114	2.7	150	< 360#
9-16	F	1550	24	24	100	6.0	0	4	7	11.2	132	4.7	760	230
Average			20	28	110	6.0 to 6.8	0	10	6	8.9	111	3.8	580	14,000

Excluded from average-indeterminate.

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 98.6

Station 207 - Located on Little River below all sources of pollution from Pinehurst and Southern Pines.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. lbs/day per 100		M.P.N. ml.
							pH Range	Phenol. ppm					20°C	25°C	
1955															Coliform
5-24	T	0900	100	25	160	6	6.5	0	5	8	6.0	71	0.8	540	9,300
7-6	W	1110	34	27	170	20	5.6	0	3	16	6.6	81	6.3	1,400	43,000
7-21	Th	0700	15	24	100	20	6.0	0	-	8	6.3	74	1.5	150	21,000
9-16	F	1500	95	23	100	6	5.5	0	3	6	7.1	82	1.8	1,200	430
Average			61	25	130	15	5.5 to 6.5	0	4	10	6.5	77	2.6	820	18,000

Station 207A (Old W18) - Located on Dunhams Creek at small lake east of filter plant at Carthage's intake. (No. 1 Lake) Drainage Area (sq. mi.) 32.4

9-7-54	T	1145	-	30	50	10	7.4	0	15	42	8.1	107	2.1	-	43
9-15	W	1635	-	27	65	10	7.2	0	15	25	8.6	106	2.6	-	11
10-5	T	1200	-	29	55	20	7.4	0	35	34	8.3	107	1.9	-	430
Average			-	29	55	15	7.2 to 7.4	0	22	34	8.3	107	2.2	-	160

Station 208 - Located on Little River at raw water intake for Fort Bragg.

5-27-55	F	0830	-	25	230	35	6.4	0	4	4	7.0	83	1.4	-	1,500
6-7	T	0830	-	24	95	20	6.8	0	22	6	7.9	93	1.2	-	2,400
7-7	Th	1020	-	27	180	55	6.0	0	7	4	7.3	90	1.8	-	930
7-22	F	0850	-	27	220	25	5.4	0	-	6	6.4	79	1.5	-	1,500
8-10	W	1220	-	28	120	10	5.7	0	9	8	6.6	84	0.9	-	230
8-19	F	0800	-	24	240	30	5.3	0	12	12	6.5	76	1.5	-	24,000
8-22	M	1750	-	26	140	6	5.3	0	10	8	6.9	84	1.1	-	7,300
Average			-	26	180	25	5.3 to 6.8	0	11	7	6.9	84	1.3	-	5,400

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TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 209 - Located on Little River above effluent from sewage treatment plant at Fort Bragg. Drainage Area (sq. mi.) 327

Date Col-lected 1955	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Tur-bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo-ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
5-27	F	0840	136	25	160	30	6.0	0	4	4	2	7.6	90	0.9	830	910
6-7	T	0845	66	24	120	10	4.0	0	0.0	8	3	8.4	99	0.9	400	4,300
7-7	Th	1045	50	27	340	65	6.4	0	5	6	.6	7.5	93	1.2	410	24,000
7-22	F	0700	110	30	180	20	5.4	0	-	6	4	7.6	100	1.5	1,100	43,000
8-10	W	1240	60	27	210	30	5.8	0	6	10	4	7.5	93	0.5	200	43,000
Average			84	27	200	30	4.0 to 6.4	0	4	7	3	7.7	95	1.0	590	23,000

Station 210 - Located on Little River below effluent outfall from Fort Bragg above pollution in McDuffie Creek and ditch containing effluent from sewage treatment plant for Spring Lake. Drainage Area (sq. mi.) 348.0

Date Col-lected 1955	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Tur-bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo-ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
5-27	F	0910	146	25	300	35	5.0	0	6	8	4	7.3	87	1.5	1,500	93,000
6-7	T	0900	72	24	95	10	6.7	0	19	6	4	7.4	87	2.5	1,200	43,000
7-7	Th	1100	58	27	180	30	6.4	0	12	12	2	5.5	68	3.7	1,400	2,400,000
7-22	F	0710	135	30	170	30	5.8	0	-	6	6	6.8	89	2.4	2,200	150,000
8-10	W	1300	70	27	210	20	6.8	0	16	12	6	5.5	68	5.4	2,600	930,000
Average			96	27	190	25	5.0 to 6.8	0	13	9	4	6.5	80	3.1	1,800	720,000

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 8.13

Station 211 - Located on McDuffie Creek below storm drainage from Pope Air Force Base, pollution from individual homes and above septic tank effluent from Brooks Trailer Court,

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH		Alkalinity Phenol. Tot. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	5 Day B.O.D. lbs/day		M.P.N. per 100 ml.
							Range						20°C	25°C	
5-27	F	0930	4.3	25	270	50	6.5		0	26	6	5.6	1.4	41	15,000
6-7	T	0935	undefined*	24*	130*	25*	6.7*	0*	0*	26*	6*	5.7*	5.4*	-	4,300*
7-7	Th	1140	1.8	25	140	30	6.4	0	18	18	5	4.9	3.7	45	9,300
7-22	F	0735	2.1	26	520	180	6.1	0	-	32	8	5.0	3.4	48	110,000,000#
8-10	W	1325	1.8	25	170	25	6.5	0	16	24	2	4.8	1.8	22	9,100
8-19	F	0820	undefined*	25*	560*	120*	6.5*	0*	9*	18*	8*	6.8*	1.9*	-	93,000*
8-22	M	1810	undefined*	27*	240*	20*	6.4*	0*	13*	20*	10*	6.5*	1.7*	-	43,000*
Average			2.5	25	280	70	6.1 to 6.7	0	16	25	5	5.1	2.6	39	11,000

* Excluded from average as flow could not be defined - reference point destroyed or water too high or too low.
Excluded from average - indeterminate.

Station 212 - Located on McDuffie Creek below all sources of pollution and 0.1 of a mile from confluence with Little River.															Drainage Area (sq. mi.) 8.13	
# Excluded from average - uneventuated.																
5-27	F	0930	4.3	25	270	40	5.7	0	11	24	6	7.7	92	1.9	55	7,300
6-7	T	0915	undefined*	24*	260*	25*	6.9*	0*	15*	22*	7*	8.7*	92*	4.0*	-	9,300*
7-7	Th	1130	1.8	26	130	30	6.9	0	18	38	5	8.3	101	2.8	34	15,000
7-22	F	0725	2.1	26	560	200	6.4	0	-	34	8	7.0	85	2.1	30	110,000,000#
8-10	W	1315	1.8	25	140	25	6.8	0	16	26	8	8.0	95	5.6	68	93,000
Average			2.5	26	280	75	5.7 to 6.9	0	15	31	7	7.8	93	3.1	47	38,000

* Excluded from average as flow could not be defined because of low flow conditions.
Excluded from average-indeterminate.

TABIE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 213 (Composite 2-point Station) -- Located on Little River below effluent from Fort Bragg, below pollution in McDuffie Creek and above ditch carrying effluent from Spring Lake sewage plant. Drainage Area (sq. mi.) 356

Date	Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm	Coliform M.P.N.
1955														
5-27	F		1010	150	25	250	45	6.5	0	5	10	89	1.9	2,300
6-7	T		1015	72	20	90	10	6.7	0	6	7	79	2.7	1,300
7-7	Th		1210	60	28	170	25	6.6	0	7	14	67	3.6	1,500
7-22	F		0750	140	25	180	45	5.9	0	-	12	80	2.1	2,000
8-10	W		1410	72	27	210	30	6.9	0	17	6	53	3.9	1,900
Average				99	25	180	30	5.9 to 6.9	0	9	10	74	2.8	2,000,000

Station 214 -- Located on effluent ditch from Spring Lake sewage plant approximately 500 ft. below outfall. Drainage Area (sq. mi.) .73

6-7	T		1010	0.7	20	160	20	6.7	0	45	14	26	58	270	< 3,600#
6-22	W		1220	1.1	22	100	35	7.2	0	65	12	32	36	270	> 110,000,000#
7-7	Th		1230	0.9	23	130	20	6.8	0	61	20	25	29	180	24,000,000
7-22	F		0805	1.0	22	130	25	6.1	0	-	34	18	30	200	43,000,000
8-10	W		1420	1.0	28	160	20	7.0	0	73	18	15	28	190	9,300,000
Average				0.9	23	140	25	6.1 to 7.2	0	61	20	23	36	220	25,000,000

Excluded from average-indeterminate.

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 360

Station 215 -- Located on Little River 1.2 miles below mouth of unnamed tributary containing waste from Spring Lake and below all sources of pollution.

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	5 Day B.O.D. ppm		M.P.N. per 100 ml.
								Phenol. ppm	Total ppm				20°C	25°C	
6-7	T	1045	76	25	95	15	6.6	0	8	8	4	6.1	4.6	2,400	240,000
6-22	W	1250	140	22	130	30	6.5	0	7	14	4	6.7	6.6	6,200	430,000
7-7	Th	1255	68	27	95	15	6.4	0	10	18	3	4.2	3.5	1,600	150,000
7-22	F	0825	127	25	180	50	5.9	0	-	14	4	6.2	1.5	1,300	15,000,000
8-10	W	1445	87	27	180	20	6.6	0	10	10	7	4.9	1.7	1,000	240,000
Average			100	25	140	25	5.9 to 6.6	0	9	13	4	5.6	3.6	2,500	3,200,000

Drainage Area (sq. mi.) 474

Station 216 -- Located on Little River 15.4 miles below Station 215 and 2.2 miles above Cape Fear River to obtain quality of water entering Cape Fear River.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	5 Day B.O.D. ppm		M.P.N. per 100 ml.
								Phenol. ppm	Total ppm				20°C	25°C	
6-22	W	1020	185	24	150	40	6.0	0	5	14	5	7.1	1.4	1,700	4,300
7-7	Th	1410	74	28	60	20	5.9	0	8	24	4	6.8	2.2	1,100	91
8-10	W	1550	89	27	100	7	6.2	0	11	8	7	6.9	0.7	420	4,300
9-13	T	1215	1,050*	23*	180*	15*	5.5*	0*	6*	12*	2*	7.5*	1.8*	13,000*	93,000*
Average			116	26	100	20	5.5 to 6.2	0	8	15	5	6.9	1.4	1,100	2,900

* Excluded from average because of unseasonable flow.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 217 -- Located on Cape Fear River 2.7 miles below mouth of Little River and 7.1 miles below Station 191 on this river.																				Drainage Area (sq. mi.) 4,230			
Date Collected	Day	Time	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Tot. ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Total ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm	B.O.D. 20°C	lbs/day per 100	M.P.N. 25°C ml.	Coliform			
9-2	F	1110	8,500	23	500	80	6.5	0	8	16	-	-	5	6.7	77	2.9	170,000	140,000					
9-13	T	1335	2,900	22	210	15	6.3	0	7	10	-	-	4	7.4	84	1.6	31,000	23,000					
9-21	W	0745	3,300	22	180	15	6.5	0	9	14	-	-	4	7.4	84	2.2	49,000	47,000					
Average			4,900	22	300	35	6.3 to 6.5	0	8	13	-	-	4	7.2	82	2.2	83,000	70,000					

Station 218--(Composite of 3-point station) -- Located on Cape Fear River 18.0 miles below Station 217 on this river and above all sources of pollution from Fayetteville and vicinity.																				Drainage Area (sq.mi.) 4,330			
6-8	W	0935	350	25	340	77	7.2	0	25	19	-	-	7	6.9	82	2.2	5,200	1,200					
6-21	T	1340	1,300	26	130	20	7.5	0	33	26	-	0	9	8.6	105	2.8	25,000	760					
7-18	M	1145	1,500	29	720	110	7.1	0	20	12	0	0	5	5.7	73	2.6	26,000	4,300					
8-11	Th	1535	540	28	440	65	7.4	0	24	24	-	-	11	6.1	77	1.2	4,400	1,900					
9-2	F	1425	9,000	24	520	80	6.5	0	8	16	-	-	5	6.4	76	2.8	170,000	37,000					
9-9	F	1415	6,800	24	260	30	6.5	0	17	20	-	-	4	6.6	78	2.2	100,000	16,000					
9-13	T	1145	3,000	22	200	15	6.0	0	9	14	-	-	3	7.0	80	1.7	34,000	19,000					
9-20	T	1630	3,900	22	500	25	6.5	0	9	18	-	-	4	7.1	81	1.9	50,000	40,000					
Average			3,300	25	380	55	6.0 to 7.5	0	18	19	-	-	6	6.8	82	2.2	52,000	15,000					

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 218 - Special study of effect of waste in Cross Creek on Cape Fear River, located at Station 218, as control above Cross Creek.

Date Col. 1958	Mile	Time	Dis- charge cfs	Temp. °C	D. O. ppm	5 Day ppm 20°C	B.O.D. lbs/day 25°C	pH Range
6-18	115.5	1030	470	29	6.1	2.8	8,900	7.5
		1600	470	29	6.5	2.8	8,900	7.2
6-19	115.5	1030	1,090	27	5.8	2.5	18,000	7.3
		1415	1,090	25	6.4	1.8	13,000	7.0
		1545	1,090	25	6.6	1.2	8,800	7.0
6-20	115.5	1030	1,470	26	5.8	1.7	17,000	7.3
		1220	1,470	26	6.0	-	-	-
		1420	1,470	27	5.7	-	-	-
		1520	1,470	26	5.5	-	-	-
6-21	115.5	1130	830	26	4.3	-	-	-
		1220	830	26	4.2	3.1	17,000	7.2
		1410	830	26	4.4	-	-	-
		1615	830	26	4.6	-	-	-
6-26	115.5	1040	530	28	4.3	-	-	-
		1225	530	28	4.3	3.3	1,200	-
		1425	530	29	4.5	-	-	-
		1625	530	30	4.5	-	-	-
6-27	115.5	0925	610	29	3.8	0.7	300	-
		1115	610	29	3.7	-	-	-
		1320	610	29	4.1	-	-	-
		1515	610	29	3.7	-	-	-

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 218 - Special study of effect of waste in Cross Creek on Cape Fear River, located at Station 218, as control above Cross Creek.

Date	Mile	Time	Dis- charge cfs	Temp. °C	D. O. ppm	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	pH Range
6-18	114.9	1100	490	29	6.1	1.8	600	8.4
		1545	490	29	5.4	3.5	1,200	7.2
6-19	114.9	1035	1,120	27	5.8	2.1	16,000	7.0
		1515	1,120	25	6.1	2.3	17,000	7.1
		1615	1,120	25	6.1	2.2	17,000	7.0
6-20	114.9	1000	1,500	26	5.8	-	-	7.4
		1200	1,500	26	5.8	1.0	10,000	7.4
		1400	1,500	27	5.8	1.9	19,000	7.0
		1500	1,500	26	5.7	1.4	14,000	7.0
6-21	114.9	1115	860	27	4.3	2.2	13,000	7.1
		1200	860	26	4.4	5.2	30,000	7.0
		1400	860	27	4.3	1.3	7,500	6.9
		1600	860	26	4.5	3.3	19,000	7.0
6-26	114.9	1010	560	29	4.2	1.2	4,500	-
		1200	560	29	4.3	1.6	6,000	-
		1400	560	29	4.3	2.1	7,900	-
		1600	560	30	3.9	5.3	20,000	-
6-27	114.9	0910	640	29	3.0	1.6	6,900	-
		1100	640	29	2.9	1.7	7,300	-
		1300	640	29	2.4	-	-	-
		1500	640	29	3.6	1.8	7,800	-

MAIN RIVER DRAINAGE AREA

Station 219 -- Located at outlet to Country Club Lake which is used for bathing. Drainage Area (sq. mi.) 2.75

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. lbs/day per 100 ml.
							Phenol. ppm	Total ppm			ppm	% Sat.		
1955														
6-8	W	1030	-	26	85	20	0	5	6	3	8.4	102	1.1	1,500
6-21	T	0835	-	23	65	15	0	5	6	2	8.5	98	1.8	2,400
7-18	M	1230	-	32	100	25	0	6	12	6	8.4	114	3.8	1,500
8-11	Th	1430	-	28	70	6	0	6	24	5	7.4	94	1.8	910
8-19	F	0850	-	26	140	15	0	8	4	7	6.4	78	2.1	9,300
8-24	W	1820	-	25	160	20	0	3	18	2	6.1	73	2.1	24,000
9-12	M	1625	-	26	100	2	0	5	6	1	6.7	82	1.5	230
Average			-	27	100	15	5.3 to 6.8	5	11	4	7.4	92	2.0	5,700

Station 220 -- Located on Cross Creek at auxiliary raw water intake for City of Fayetteville and above part of storm drainage.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. lbs/day per 100 ml.
							Phenol. ppm	Total ppm			ppm	% Sat.		
6-8	W	1045	8.8	23	100	20	0	5	4	2	7.4	85	0.5	930
6-21	T	0845	10	23	100	25	0	6	4	3	7.5	86	0.5	2,400
7-18	M	1245	9.6	29	170	25	0	4	12	5	6.4	82	1.7	430
8-11	Th	1455	9.0	28	140	10	0	3	20	4	6.5	82	0.8	930
8-19	F	0910	undefined*	26*	160*	10*	0*	12*	6*	6*	3.4*	41*	1.0*	43,000*
8-24	W	1830	undefined*	25*	18*	30*	0*	1*	12*	2*	4.0*	48*	2.0*	9,300*
9-12	M	1730	17	24	210	15	-	4	6	3	6.0	71	1.4	24,000
Average			11	25	140	20	4.6 to 6.1	4	9	3	6.8	81	1.0	5,700

* Excluded from average as flow undefined due to high water.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 221 - Located on raw water intake for City of Fayetteville on Glenville Lake. Drainage Area (sq.mi.) 9.54

Date Collected 1955	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20° C	M.P.N. lbs/day per 100 ml.	Coliform
6-8	W	1100	-	26	140	15	6.4	0	5	10	3	6.1	74	1.1	-	210
6-21	T	0900	-	23	130	70	6.6	0	6	8	3	7.3	84	2.0	-	150
7-18	M	1300	-	33	240	50	6.2	0	6	12	6	8.7	119	2.6	-	1,500
8-11	Th	1505	-	28	140	15	7.2	0	14	18	5	6.7	85	1.7	-	230
8-19	F	0920	-	27	280	45	6.1	0	10	10	5	5.8	72	1.9	-	43,000
8-24	W	1845	-	25	440	60	5.6	0	9	10	2	4.5	54	3.2	-	43,000
9-12	M	1800	-	22	320	40	6.1	0	7	6	2	4.6	52	2.2	-	1,500
Average				26	240	40	5.6 to 7.2	0	8	11	4	6.2	77	2.1	-	13,000

Station 222 - Located on Cross Creek 0.3 of a mile above confluence with Blounts Creek and below part of storm drainage from City of Fayetteville. Drainage Area (sq.mi.) 26.6

6-8	W	0905	9.5	22	140	20	6.5	0	10	12	6	6.3	72	2.3	150	24,000
6-21	T	1320	11	26	140	50	6.8	0	20	18	9	5.7	70	> 6.9#	> 510#	93,000
7-18	M	1510	9	29	420	120	6.3	0	6	18	9	5.4	69	5.0	300	93,000
8-11	Th	1120	8.6	27	440	55	7.0	0	19	20	8	5.5	68	> 7.4#	> 430#	93,000
9-12	M	1740	26	25	240	25	6.4	0	12	12	4	6.9	82	8.0	1,400	43,000
Average			13	26	280	55	6.3 to 7.0	0	13	16	7	6.0	72	5.1	620	69,000

Excluded from average-indeterminate.

MAIN RIVER DRAINAGE AREA

Station 223 - Located on Hybarts Branch near Bonnie Doone below point of discharge of industrial waste from Sycamore Dairy. Drainage Area (sq. mi.) .24

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.
6-3	W	0825	0*	21*	1,560*	700*	7.4*	0*	290*	58*	24*	0.4*	4*	>630*	-	930,000*
6-21	T	1235	0*	22*	1,080*	1,100*	6.9*	0*	240*	52*	24*	0.0*	0*	830*	-	1,500,000*
7-18	M	1430	0	Dairy not operating; therefore, no flow in stream.												
8-11	Th	1025	.11	27	540	100	6.9	0	246	80	25	0.4	5	590	440	930,000
9-12	M	1650	.17	24	130	15	6.5	0	38	28	12	0.8	9	75	86	730,000

Station 224 - Located on Hubarts Branch at a point below industrial waste from Sycamore Dairy, at possible bathing area in Bailey's Pond and 1.1 miles below Station 223 on this branch. Drainage Area (sq. mi.) 1.11

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.
6-3	W	0845	.15	21	240	35	6.2	0	48	24	8	0.8	9	-	-	1,500
6-21	T	1255	.2	22	200	35	6.3	0	36	20	10	0.9	10	11	15	1,500
7-18	M	1450	0.25	29	420	140	5.9	0	23	28	8	2.0	26	7.5	13	9,300
8-11	Th	1045	0.35	25	210	15	6.5	0	30	48	13	0.5	6	9.0	21	1,500
9-12	M	1705	35*	25*	130*	8*	6.5*	0*	20*	26*	8*	5.3*	63*	4.8*	1,100*	15,000*
Average			0.24	24	260	55	5.9 to 6.5	0	34	30	10	1.1	13	9.2	16	3,500

*Excluded from flow because of unseasonable flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 225 -- Located on Branson Creek below industrial waste from Sycamore Dairy, 0.5 mile below Station 224 on Hybarts Branch and above confluence with Blounts Creek. Drainage Area (sq. mi.) 3.65

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100ml.
1955	Th	0820	2.0	18	85	15	6.5	0	6	7	8.4	88	0.8	11	43,000
6-22	W	0615	2.1	19	90	25	6.5	0	7	7	8.4	89	-	-	4,300
7-19	T	1020	2.1	23	200	30	6.4	0	14	7	6.8	78	1.4	20	4,300
8-8	M	1315	1.6	25	110	10	6.5	0	8	7	7.0	83	1.0	11	24,000
9-8	Th	1515	undefined*	23*	170*	15*	6.5*	0*	10*	6*	6.1*	70*	1.4*	-	4,300*
Average			2.0	21	120	20	6.4 to 6.5	0	9	7	7.7	85	1.1	14	19,000

* Excluded from average as flow undefined due to high water.

Station 226 -- Located on Blounts Creek 0.6 of a mile below Station 225 on Branson Creek and above storm drainage from business district for City of Fayetteville. Drainage Area (sq. mi.) 9.93

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100ml.
6-9	Th	0845	5.6	20	90	15	6.3	0	5	5	8.6	93	2.1	79	15,000
6-22	W	0635	7.5	22	80	25	6.5	0	7	7	7.4	84	0.5	25	15,000
7-19	T	1035	5.5	29	160	25	6.0	0	11	7	6.9	88	1.5	56	9,300
8-8	M	1330	3.5	29	160	7	6.5	0	7	5	7.5	96	1.3	31	910
9-8	Th	1600	27*	23*	200*	20*	5.5*	0*	6*	5*	6.5*	75*	1.3*	240*	4,300*
Average			5.5	25	120	20	5.5 to 6.5	0	8	6	7.6	90	1.4	48	10,000

* Excluded from average because of unseasonable flow.

MAIN RIVER DRAINAGE AREA

Station 227 - Located on Blounts Creek at a point below part of storm drainage from Drainage Area (sq. mi.) 11.7
City of Fayetteville and 0.2 of a mile from Cross Creek.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	B.O.D. 25°C	M.P.N. per 100 ml.
							pH Range	Phenol. ppm			ppm	% Sat.			
6-9 1955	Th	0915	5.8	20	120	15	6.5	0	18	6	5.7	62	4.9	190	2,400,000
6-22	W	0650	7.7	22	100	20	6.6	0	10	7	7.0	80	2.3	120	230,000
7-19	T	1105	6.4	28	140	10	6.6	0	18	10	6.2	78	3.2	140	1,500,000
8-8	M	1345	4.0	30	140	10	6.7	0	12	7	6.1	80	6.8	180	< 360,000#
9-8	Th	1620	undefined*	23*	220*	25*	6.3*	0*	24*	8*	7.1*	82*	3.6*	-	93,000*
Average			6.0	25	130	15	6.3 to 6.7	0	15	8	6.3	75	4.3	160	1,400,000

* Excluded from average as flow undefined due to high water.
Excluded from average-indeterminate.

Station 228 - Located on Cross Creek below confluence with Blounts Creek and above untreated sewage and industrial waste from City of Fayetteville.

Drainage Area (sq. mi.) 38.6.

6-9	Th	0930	6.7	21	120	20	6.7	0	16	26	10	6.7	74	14	630	930,000
6-22	W	0705	15	22	80	15	6.6	0	12	34	8	7.9	90	1.5	150	230,000
7-19	T	1130	34	29	220	30	6.7	0	14	16	6	6.0	77	> 7.2#	1,700#	43,000
8-8	M	1400	20	30	280	20	7.0	0	18	12	7	6.1	80	9.0	1,200	23,000
9-8	Th	1630	undefined*	24*	260*	30*	6.3*	0*	10*	16*	7*	7.1*	84*	6.4*	-	240,000*
Average			19	26	180	20	6.3 to 7.0	0	15	22	8	6.7	80	8.2	660	310,000

* Excluded from average as flow undefined due to high water.
Excluded from average-indeterminate.

TABIE 23
ANALYTICAL RESULTS
MAJN HIVER DRAINAGE AREA

Station 229 - Located on Cross Creek at a point below all sewage and industrial waste and storm drainage from City of Fayetteville. Drainage Area (sq. mi.) 39.6

Date Col- lected 1955	Day Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. Tot. ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chlo- ride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20°C
6-9	Th 1015	14	23	400	40	7.1	0	82	0	24	0.4	100
6-22	W 0720	28	22	130	15	6.6	0	9	0	13	5.5	9,500
7-19	T 1200	29	28	240	25	6.8	0	50	0	18	1.7	60
8-8	M 1410	24	30	340	150	7.0	0	63	0	21	0.0	12,000
9-8	Th 1650	undefined*	24*	210*	30*	6.5*	0*	22*	0*	10*	4.3*	84
Average		24	26	280	60	6.5 to 7.1	0	51	0	19	1.9	16*

Date Col- lected 1955	Day Time	Coliform M.P.N. per 100 mL	Cyanide ppm	Copper ppm	Formaldehyde ppm
6-9	Th 1015	4,300,000	<.05	0	<.05
6-22	W 0720	~	<.05	0	-
7-19	T 1200	9,300,000	<.05	0	-
8-8	M 1410	9,300,000	.02	0	-
9-8	Th 1650	9,300,000*	0*	-	-
Average		7,600,000	<.05	0	0

* Excluded from average as flow undefined due to high water.

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 230 - Located on Buzzard Branch at a point below industrial waste from McDaniel Abattoir. Drainage Area (sq. mi.) .33

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
								Phenol. ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
6-10	F	1005	0.05	19	540	25	7.2	0	112	64	30	0.1	1	120	41	2,400,000
7-13	W	1205	2	29	210	120	6.9	0	20	44	8	6.3	81	13	180	9,300,000
8-4	Th	0825	0.2	24	320	40	6.8	0	42	48	19	0.8	9	-	-	430,000
9-22	Th	1405	1	24	320	30	7.0	0	18	26	4	6.4	75	5.0	34	24,000
Average			0.8	24	340	55	6.8 to 7.2	0	48	46	15	3.4	42	46	85	3,000,000

Station 231 - Located on Lock Creek at a point below industrial waste from McDaniel Abattoir below storm drainage from East Fayetteville and 0.3 of a mile from the Cape Fear River

Station 231 -- Located on Lock Creek at a point below industrial waste from McDaniel Abattoir below storm drainage from East Fayetteville and 0.3 of a mile from the Cape Fear River																
6-10	F	0950	5.5	19	140	10	6.8	0	12	40	11	7.8	83	-	-	9
8-4	Th	0800	4.0	24	180	10	6.5	0	6	18	7	6.7	79	-	-	15
9-22	Th	1500	72	23	260	10	5.1	0	7	28	2	6.9	79	1.4	680	9

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 232 - Located in the mouth of Atkinson Canal below industrial waste from Holt Williams Manufacturing Company and one outfall from the City of Fayetteville. Drainage Area (sq. mi.) .13

Date Col-lected 1955	Day Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C
6-10	F 0920	undefined	24	1,560	420	7.3	0	216	80	0	0	200	-
8-4	Th 0720	.39 est.	24	210	10	7.2	0	106	58	0	2.4	-	-
9-22	Th 1145	1.05 est.	27	2,800	30	7.2	0	110	100	-	-	170	1,200

Date Col-lected 1955	Day Time	Coliform M.P.N. per 100 mL.	Cyanide ppm	Copper ppm	Sulfide ppm	Formaldehyde ppm
6-10	F 0920	43,000,000	.10	-	.72	<.05
8-4	Th 0720	110,000,000	0	-	0	0
9-22	Th 1145	930,000	0	-	0	-

Station 232A - Grab samples from Fayetteville outfall #4 at Atkinsons Canal. Drainage Area (sq. mi.)

Date Col-lected 1955	Day Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 mL.
6-10	F 0920	0.11	-	-	-	7.9	-	94	78	-	350	210	240,000,000
9-22	Th 1215	0.17	25	1,380	220	6.8	-	68	68	-	330	300	240,000,000

Station 233 - Located on ditch immediately below industrial waste cutfall from Drainage Area (sq. mi.) Indt. Underwood Poultry Company.

Date Col.	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity		Acidity Mineral Tot. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. %		5 Day B.O.D. ppm	Colif. M.P.N. per 100ml.
								Phenol. ppm	Phenol. Tot. ppm				ppm	Sat. 20°C		
1955																
6-10	F	1035	0.03	20	980	280	6.5	0	63	-	64	72	0.0	0	>250	2,400,000
7-13	W	1235	3.0	25	240	40	4.7	0	5	-	36	11	7.4	88	56	1,100
8-14	Th	0845	0.08	24	460	100	6.5	0	24	-	28	22	0.8	9	140	15,000,000
9-22	Th	-	*	25	210	6	4.5	0	<1	0	24	7	2.7	32	93	23,000

* High flow undefined.

Station 234 (Composite 3-point station) - Located on Cape Fear River at Mile Board 112 Drainage Area (sq. mi.) 4,420 at a point below all sources of pollution from Fayetteville and vicinity.

Date Col-lected	Day	Time	Mean Daily Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chromium Hex. ppm	Chloride ppm	D.O. %		5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.
								Phenol. ppm	Phenol. Tot. ppm				ppm	Sat. 20°C		
1955																
6-10	F	1103	460	25	340	40	7.1	0	32	30	0	91	3.7	43	5.0	16,000
6-21	T	0715	1,200	25	200	55	6.9	0	27	20	0	8	5.6	67	-	220,000
7-12	T	0942	6,100	26	460	100	6.6	0	16	20	-	7	5.9	72	4.1	170,000
7-26	T	1302	1,230	30	680	75	6.6	0	10	10	-	5	4.4	58	3.3	27,000
7-27	W	1553	1,110*	32*	-	-	-	-	-	-	-	-	5.4*	73*	-	-
9-15#	Th	1236	3,010	22	240	25	6.5	0	10	14	-	8	7.1	81	1.2	24,000
Average			2,400	26	380	60	6.5 to 7.1	0	19	19	-	24	5.3	64	3.4	59,000

* Excluded from average - no chemical sample collected.

Collected at mile 111.3.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 234 - Special study of effect of waste in Cross Creek on Cape Fear River.
Located near Station 234 at the various points of maximum oxygen depletion.

Date	Mile	Time	Dis- charge cfs	Temp. °C	D. O. ppm	5 Day B.O.D. ppm 20°C	lbs/day 25°C	pH Range
6-18	-	1300	520	29	4.9	2.8	9,800	7.8
6-19	-	1630	520	29	6.1	3.0	11,000	7.1
	-	1115	1,150	27	2.2	2.6	20,000	7.0
	-	1330	1,150	27	3.5	3.0	23,000	7.0
	-	1500	1,150	27	3.2	3.0	23,000	6.9
6-20	112	1030	1,500	27	5.5	1.2	12,000	7.0
	112	1200	1,500	27	5.5	1.2	12,000	7.2
	112.5	1405	1,500	27	5.5	1.5	15,000	7.2
	113	1605	1,500	27	5.3	0.9	9,100	7.2
6-21	113	1130	890	27	3.8	2.1	13,000	7.1
	112.5	1225	890	27	3.9	2.1	13,000	7.0
	112.5	1425	890	27	4.1	2.0	12,000	7.1
	112	1600	890	27	4.1	2.8	17,000	7.2
6-26	113	1017	590	28	2.2	3.4	14,000	-
	112.5	1212	590	28	2.2	2.4	9,600	-
	112.5	1410	590	29	3.2	5.7	23,000	-
	112	1606	590	29	2.4	6.0	24,000	-
6-27	112.5	0904	670	28	2.0	3.1	14,000	-
	112.5	1100	670	29	1.8	3.6	16,000	-
	112.5	1303	670	29	2.1	4.3	19,000	-
	112.5	1458	670	29	2.8	4.5	20,000	-

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 234A - (Composite of 3-point station) - Located on Cape Fear River at approx-
imately the point of D.O. sag below City of Fayetteville. Drainage Area (sq. mi.)

Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range	Alkalinity			Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 35°C	M.P.N. per 100 ml.	Col- lected at
								ppm	ppm	ppm								
7-12	T	1222	-	26	120	65	6.4	0	17	22	22	6	5.6	68	2.5	-	43,000	Mile 100
7-27	W	1918	-	30	500	55	6.7	0	13	18	18	5	5.0	66	1.7	-	43,000	Mile 108.5
8-9	T	1448	-	30	360	50	7.0	0	24	18	18	8	4.0	53	2.3	-	96,000	Mile 109
Average				29	320	55	6.4 to 7.0	0	18	19	19	6	4.9	62	2.2	-	61,000	

Station 234N - (Composite of 3-point station) - Located on Cape Fear River near Mile
Board 113 at a point below all sources in Fayetteville and vicinity. Drainage Area (sq. mi.)

8-9	T	1115	-	30	280	35	6.9	0	25	24	9	4.2	55	2.7	-	1,600,000	Mile 113.5
9-15	Th	1150	-	22	-	-	7.0	0	15	14	9	7.1	81	1.2	-	19,000	Mile 113.3

Station 235 - Located on Rockfish Creek at bathing area for Town of Raeford and above
Pedlars Branch containing effluent from Raeford sewage treatment plant. Drainage Area (sq. mi.) 90.7

6-13	M	1410	81	21	95	10	6.4	0	12	6	6	8.1	90	1.8	980	2,400	-
6-23	Th	0700	93	21	70	15	6.8	0	7	10	4	7.8	87	0.5	310	4,300	-
7-5	T	1615	38	24	50	6	6.4	0	8	10	5	7.6	89	1.6	410	1,500	-
8-5	F	0905	70	23	95	5	6.5	0	4	16	2	7.2	83	0.2	95	-	-
Average			71	22	80	9	6.4 to 6.8	0	8	11	4	7.7	87	1.0	450	2,700	-

TABIE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 236 - Located on Pedlers Branch at a point below effluent from primary sewage plant for Town of Raeford. Drainage Area (sq. mi.) 2.27

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	M. P.N. lbs/day per 100 ml, 25°C	Coliform
6-13	M	11:35	2.4	21	180	110	6.8	0	24	12	1.9	21	>30#	>490#	4,300,000
6-23	Th	0705	2.6	20	120	40	6.5	0	26	8	4.0	43	47	820	2,300,000
7-5	T	1635	2.4	29	90	35	6.8	0	24	16	1.7	22	>45#	>730#	2,300,000
8-5	F	0920	2.3	23	130	15	6.5	0	22	11	0.6	7	30	470	46,000,000
Average			2.4	23	130	50	6.5 to 6.8	0	24	12	2.1	23			14,000,000

Excluded from average - indeterminate.

Station 237 - Located on Rockfish Creek 0.4 of a mile below mouth of Pedlers Branch which contains effluent from primary sewage and industrial waste treatment plant for Town of Raeford. Drainage Area (sq. mi.) 95.7

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	M. P.N. lbs/day per 100 ml, 25°C	Coliform
6-13	M	1500	92	20	80	25	6.4	0	7	14	7.6	83	3.0	1,900	24,000
6-23	Th	0645	92	21	60	15	5.6	0	3	20	7.4	82	1.4	870	230,000
7-5	T	1700	40	24	50	10	6.4	0	7	10	6.7	79	2.6	700	21,000
8-5	F	0850	70	23	85	6	5.4	0	6	20	7.0	80	1.2	570	1,500,000
Average			74	22	70	15	5.4 to 6.4	0	6	16	7.2	81	2.1	1,000	440,000

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 238 - Located on Rockfish Creek below pollution from Raeford and 5.1 miles Drainage Area (sq. mi.) 147
below Station 237 on this stream

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Equiv. ppm	Total Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. lbs/day per 100 ml.		Coliform M.P.N.
												ppm 20°C	ppm 25°C	
1-5-55														
6-13	M	1530	130	20	85	15	6.4	0	9	10	7.6	0.7	610	24,000
6-23	Th	0745	145	21	80	55	5.6	0	3	10	7.4	0.9	880	43,000
7-5	T	1730	60	24	55	20	5.9	0	5	10	7.3	0.9	360	93,000
8-5	F	0945	120	24	95	6	5.0	0	3	10	6.8	0.6	490	360
8-24	W	0950	undefined*	23*	360*	35*	5.6*	0*	6*	10*	6.1*	70*	4.8*	93,000*
Average			114	22	80	25	5.0 to 6.4	0	5	10	7.3	0.8	590	40,000

* Excluded from average as flow undefined due to high water.

Station 239 - Located at end of diving pier at Lake Tom Upchurch.														Drainage Area (sq.mi.) 178
6-13	M	1615	--	24	100	55	6.4	0	5	14	8.0	1.0	--	430,000
6-23	Th	0815	--	25	65	15	6.5	0	4	14	9.5	1.7	--	4,300
7-5	T	1420	--	31	70	20	6.4	0	6	10	9.0	0.7	--	2,300
8-5	F	1005	--	28	120	6	5.3	0	4	12	5.1	2.1	--	9,300
8-19	F	0700	--	24	180	10	5.0	0	19	8	4.8	1.6	--	43,000
8-24	W	1115	--	23	260	30	4.4	0	<1#	12	5.7	2.8	--	24,000
Average			--	26	130	25	4.4 to 6.5	0	8	12	7.0	1.7	--	85,000

Excluded from average-indeterminate.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 239A -- Located at end of pier at Perma-Stone Lake bathing Area. Drainage Area (sq. mi.)

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-13	M	1640	--	27	95	20	6.5	0	16	2	8.1	100	2.6	--	24,000
6-23	Th	0855	--	27	120	15	5.8	0	14	4	8.0	99	1.2	--	73
7-5	T	1450	--	32	45	20	5.8	0	14	5	7.8	105	2.0	--	210
8-5	F	1055	--	31	90	10	5.7	0	10	3	6.6	88	1.1	--	91
8-19	F	0640	--	27	120	20	5.9	0	8	6	7.1	88	1.5	--	2,400
8-24	W	1135	--	27	120	10	4.6	0	10	8	6.9	85	1.0	--	2,400
Average			--	29	100	15	4.6 to 6.5	0	12	5	7.4	94	1.6	--	4,900

Station 240 -- Located on Rockfish Creek above dam at Brower Mills and above untreated domestic sewage from the mill. Drainage Area (sq. mi.) 189

6-13	M	1730	200#	23	120	25	6.0	0	14	1	6.7	77	1.2	1,600	2,300
6-23	Th	0925	250	26	85	20	6.2	0	16	3	8.6	105	1.0	1,700	9,300
7-5	T	1530	280	31	80	25	5.4	0	12	6	6.4	104	1.2	2,300	1,100
8-5	F	1120	200#	28	120	10	5.4	0	10	2	5.8	73	1.0	1,400	930
8-19	F	0625	undefined*26*	26*	140*	20*	5.5*	0*	10*	6*	6.7*	82*	1.4*	--	24,000*
8-24	W	1210	undefined*25*	25*	180*	25*	4.3*	0*	12*	9*	6.1*	73*	1.2*	--	24,000*
Average			230	27	100	20	4.3 to 6.2	0	13	3	6.9	90	1.1	1,800	3,400

* Excluded from average as high flow undefined.
Flow is mean daily discharge.

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 189

Station 241 - Located on Rockfish at a point approximately 1,000 ft. downstream from domestic sewage outfall from Brewer Mills.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.C.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.
								Phenol. ppm	Total ppm							
1955																
6-13	M	1755	200*	23	170	20	6.5	0	7	12	2	7.4	85	2.4	3,200	15,000
6-23	Th	0945	250	22	85	25	6.0	0	5	10	4	8.1	92	1.0	1,700	24,000
7-5	T	1555	280	30	90	20	6.6	0	9	14	6	7.9	104	0.9	1,700	15,000
8-5	F	1135	200*	26	100	6	6.1	0	7	10	3	6.8	83	0.8	1,100	150,000
Average			230	25	110	20	6.0 to 6.6	0	7	12	4	7.6	91	1.3	1,900	51,000

* Flow is mean daily discharge.

Station 242 - Located at diving pier at Lakewood Lake bathing area.

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.C.D. ppm 20°C	lbs/day 25°C	M.P.N. per 100 ml.
								Phenol. ppm	Total ppm							
6-14	T	1145	-	21	160	35	6.4	0	8	10	3	8.0	89	2.9	-	1,500
6-24	F	0555	-	26	80	10	6.2	0	8	8	4	7.7	94	2.5	-	4,300
7-13	W	0750	-	28	55	20	6.2	0	9	14	4	7.0	89	3.7	-	1,500
8-4	Th	0950	-	29	80	6	6.0	0	6	26	3	3.9	50	2.4	-	360
8-15	M	1600	-	27	90	6	6.2	0	8	10	5	5.8	72	4.2	-	1,500
8-19	F	0720	-	26	110	10	6.2	0	10	6	8	6.0	73	2.4	-	2,400
8-24	W	1045	-	25	180	15	5.0	0	2	16	8	3.1	37	2.8	-	9,300
8-30	T	1400	-	25	140	8	5.3	0	4	10	2	8.2	98	1.5	-	230
Average			-	26	110	15	5.0 to 6.4	0	7	13	5	6.2	75	2.8	-	2,600

Drainage Area (sq. mi.) 83.4

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 243 - Located on Jacks Ford Branch at a point approximately 1,500 ft. below
effluent outfall from Bonnie Doone sewage treatment plant. Drainage Area (sq. mi.) 48

Date Collected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Total Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 35°C	M.P.N. per 100 ml.	Coliform
6-14	T	1400	7	25	200	40	7.0	0	103	24	0.0	0	62	290	4,300,000	
6-24	F	0700	1.7	18	100	55	6.4	0	19	8	2.2	23	11	130	93,000,000	
7-13	W	0900	.6	21	240	45	6.5	0	60	32	0.7	8	26	110	24,000,000	
8-4	Th	1100	.9	23	210	10	6.8	0	72	32	0.1	1	32	190	430,000	
8-15	M	1710	.4	25	260	20	6.8	0	91	28	0.0	0	61	160	24,000,000	
8-30	T	1500	2.0	23	120	8	6.4	0	40	20	0.2	2	21	280	4,300,000	
Average			1.1	23	190	30	6.4 to 7.0	0	64	24	0.5	3	36	190	25,000,000	

Station 244	Located on Big Beaver Creek at a point 1.0 mile below effluent from Bonnie Doone Sewage Plant on Jacks Ford Branch.															Drainage Area (sq. mi.) 10.6
6-14	T	1435	7.4	25	240	70	6.7	0	10	20	4	7.9	2.7	130	73,000	
6-24	F	0745	18	22	880	550	6.1	0	13	16	2	6.2	3.4	410	73,000	
7-13	W	0930	14	25	660	220	6.3	0	15	20	5	5.3	3.5	330	300,000	
8-4	Th	1125	6.9	29	260	50	6.6	0	11	32	4	6.0	3.1	140	24,000	
8-15	M	1645	8.8	31	780	180	6.5	0	10	14	5	5.9	1.4	83	15,000	
8-30	T	1800	12	26	280	30	6.4	0	8	14	4	7.0	2.1	170	3,600	
Average			11.2	26	520	180	6.1 to 6.7	0	11	19	4	6.4	2.7	210	81,000	

MAIN RIVER DRAINAGE AREA

Station 245 -- Located on Big Beaver Creek below pollution from Bonnie Doone and Drainage Area (sq. mi.) 31.1
above domestic sewage from community of Cumberland.

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. lbs/day at 20°C	5 Day B.O.D. lbs/day at 25°C	M.P.N. per 100 ml.	Coliform
1955																	
6-14	T	1200	18	23	230	30	6.5	0	5	6	4	8.0	92	0.9	110	4,300	
6-24	F	0610	55	22	420	220	6.1	0	12	14	2	7.0	80	4.1	1,500	15,000	
7-13	W	0810	41	24	340	70	6.2	0	13	38	6	6.7	79	2.4	660	2,900	
8-4	Th	1010	18	27	160	10	6.5	0	7	22	2	7.7	95	3.3	400	24,000	
8-15	M	1615	11	28	170	15	6.4	0	10	14	6	7.0	89	1.0	74	430,000	
8-30	T	1420	39	25	1440	90	6.0	0	5	10	2	6.9	82	2.2	580	9,300	
Average			30	25	300	70	6.0 to 6.5	0	9	17	4	7.2	86	2.3	550	81,000	

Station 246 -- Located on Little Rockfish Creek at a point 1.6 miles below effluent from Cumberland sewage treatment plant on Big Beaver Creek.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. lbs/day at 20°C	5 Day B.O.D. lbs/day at 25°C	M.P.N. per 100 ml.	Coliform
6-14	T	1240	30	23	140	25	6.4	0	4	10	4	8.1	93	0.1	20	4,300	
6-24	F	0620	140	22	280	240	5.6	0	12	10	2	7.5	85	2.6	2,400	39,000	
7-13	W	0820	150	29	120	25	7.2	0	24	-	9	6.5	82	2.1	2,100	4,300	
8-4	Th	1025	10	27	180	15	6.5	0	7	10	3	7.3	90	1.5	100	24,000	
8-15	M	1625	90	26	140	7	5.8	0	8	10	6	6.8	83	0.7	430	15,000	
8-30	T	1430	120	24	240	35	5.3	0	5	10	2	6.7	79	1.6	1,300	2,300	
Average			90	25	180	60	5.3 to 7.2	0	10	10	4	7.2	85	1.4	1,100	15,000	

MAIN RIVER DRAINAGE AREA

Station 247 - Located at outlet to Hope Mills Pond # 1 Bathing Area.

Drainage Area (sq. mi.) 94.4

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	M.P.N. lbs/day per 100 ml. 25°C	Coliform
6-15	W	1500	-	27	130	20	6.9	-	6	2	9.2	2.9	-	2,400
7-14	Th	0650	-	26	130	20	5.4	0	10	4	5.9	2.4	-	730
8-2	T	0920	-	29	140	15	6.4	0	12	4	5.4	3.7	-	4,300
8-24	W	1155	-	25	420	55	4.6	-	18	8	4.8	1.7	-	24,000
8-29	M	1700	-	27	170	10	5.0	-	12	1	4.1	3.2	-	1,500
Average			-	27	200	25	4.6 to 6.9	0	12	4	5.9	2.8	-	6,600

Station 248 - Located on Little Rockfish Creek at a point approximately 50 ft. upstream from effluent from Hope Mills Sewage Treatment Plant.

Drainage Area (sq. mi.) 95.3

6-15	W	1025	14	22	120	25	6.9	0	6	3	8.6	2.0	190	1,100
7-14	Th	0630	63	24	180	20	5.7	0	10	4	6.3	2.6	1,100	15,000
8-2	T	0910	19	26	160	20	5.1	0	18	10	7.5	3.7	470	9,300
8-29	M	1500	64	25	180	15	5.0	-	14	4	7.6	1.6	690	9,300
Average			40	24	160	20	5.0 to 6.9	0	12	5	7.5	2.5	610	8,700

Station 249 - Located on Little Rockfish Creek at a point approximately 0.5 of a mile below effluent from Hope Mills Sewage Treatment Plant.

Drainage Area (sq. mi.) 95.6

6-15	W	1050	14	22	130	20	6.5	0	6	4	8.2	2.3	220	93,000
7-14	Th	0835	63	25	160	25	5.9	0	10	5	6.7	2.0	850	93,000
8-2	T	1040	19	26	140	20	5.5	0	10	4	7.0	1.2	150	930,000
8-29	M	1525	64	25	180	15	5.6	-	6	3	7.4	2.2	950	43,000
Average			40	25	150	20	5.5 to 6.5	0	8	4	7.3	1.9	540	290,000

Station 250 - Located on Rockfish Creek below all sources of pollution on this stream and 1.7 miles above confluence with Cape Fear River.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chlo-ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1955	6-15	W	1200	23	100	20	6.9	0	7	8	2	8.3	95	1.0	1,100	43,000
	7-14	Th	0805	25	140	25	5.5	0	12	8	2	6.9	82	2.0	7,400	4,300
	8-2	T	1020	28	100	20	4.9	0	9	6	5	6.9	87	1.7	3,000	9,300
	8-29	M	1630	25	170	15	4.7	0	1	6	4	7.0	83	1.2	5,600	2,300
Average			420	25	130	20	4.7 to 6.9	0	7	7	3	7.3	87	1.5	4,300	15,000

Note: Discharge is Mean Daily Flow.

Drainage Area (sq. mi.) 92

Station 251 - Located on a ditch flowing to an unnamed stream tributary to Cape Fear River approximately 500 ft. below industrial waste outfall from Thomason Plywood and Southern Resin and Glue Company.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Acidity Mineral ppm	Hardness as CaCO ₃ ppm	Chlo-ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
1955	6-17	F	0615	17	320	10	6.6	0	25	-	20	10	2.1	22	3.4	2
	7-14	Th	1005	22	180	10	5.2	0	25	-	10	8	3.9	44	2.5	19
	8-2	T	0825	23	240	10	4.8	0	9	-	6	6	3.6	41	2.0	8
	8-29	M	1410	24	280	10	5.0	0	4	-	6	7	3.0	35	5.8	43
	9-21	W	1630	23	320	2	4.7	0	2	-	12	7	2.4	28	3.7	85
	9-28	W	1215	21	280	6	5.1	0	6	0	12	8	3.0	33	2.4	26
Average			1.3	22	280	8	4.7 to 6.6	0	12		11	8	3.0	34	3.3	31

Date	Day	Time	Coliform M.P.N. per 100 ml.	Formaldehyde ppm
1955	6-17	F	2,400,000	-
	7-14	Th	15,000	-
	8-2	T	9,300	-
	8-29	M	43,000	-
	9-21	W	9,300	0
	9-28	W	24,000	.23
Average			420,000	

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 251A - Located on West ditch from Southern Resin & Glue Company and Thompson Plywood Corp. at Vander.																		
Date	Col.	Day	Time	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity ppm	Phenol. ppm	Tot. Min. ppm	Acidity ppm	Hardness ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.	For-maldehyde ppm	Grease ppm
1955																		
9-21	W		1600	62	420	90	6.8	-	45	-	34	14	2.3	-	130	< 36	.6	-
9-23	W		1150	54	80	40	7.4	-	54	-	28	20	3.0	-	19	930	.7	576
Station 251B - Located on unnamed tributary to Cape Fear River below East ditch from Southern Resin & Glue Company and Thompson Plywood Corp. at Vander.																		
9-28	W		1115	21	260	5	5.4	-	9	-	34	20	9	3.0	-	2,400	.22	37
Station 251C - Located on East ditch from Southern Resin & Glue Company and Thompson Plywood Corp. at Vander.																		
9-28	W		1100	21	160	10	7.4	-	464	-	44	25	0.3	-	17	430,000	-	300
Station 251D - Located on unnamed tributary to Cape Fear River above East ditch from Southern Resin & Glue Company and Thompson Plywood Corp. at Vander.																		
9-28	W		1130	21	230	3	5.5	-	13	-	34	10	8	5.2	-	240	.2	602

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 252 - Located on unnamed tributary to Cape Fear River below industrial waste outfall from Thomason Plywood & Southern Resin & Glue Company and 0.6 of a mile below Station 251 on this stream. Drainage Area (sq. mi.)

Date	Col.	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Acidity Mineral Tot. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. % Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C
1955	6-17	F	0630	0.1	17	380	25	6.6	0	25	-	10	2.1	1.7	1
	7-14	Th	1025	1.2	22	260	7	5.3	0	24	-	7	2.5	1.9	15
	8-2	T	0835	0.6	23	260	10	6.2	0	8	-	5	1.9	1.7	7
	8-29	M	1423	1.2	23	340	6	4.9	0	3	-	8	2.4	2.6	21
	9-21	W	1700	3.6	23	320	3	4.8	0	3	-	6	2.4	2.0	49
	9-28	W	1225	1.7	21	340	3	5.1	0	7	-	8	2.3	1.3	15
Average				1.4	22	320	9	4.8 to 6.6	0	12	-	7	2.3	1.9	18

Date	Col.	Day	Time	Coliform M.P.N. per 100 ml.	Formaldehyde ppm	Grease ppm
1955	6-17	F	0630	2,300	-	-
	7-14	Th	1025	4,300	-	-
	8-2	T	0835	9,300	-	-
	8-29	M	1423	2,400	-	-
	9-21	W	1700	2,400	0	-
	9-28	W	1225	4,300	.18	337
Average				4,200		

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 253 - Located at outlet to Rainbow Lake bathing area.

Date Collected 1955	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Acidity Total Min. ppm	Hardness Total as CaCO ₃ ppm		Chloride ppm	D. O. %	5 Day BOD, ppm	M.P.N. per 100 ml.	Coliform
								Phenol ppm	Total ppm								
6-17	F	0715	-	23	160	20	4.3	0	0	-	20	7.6	87	0.7	-	-	1,500
7-14	Th	1115	-	28	140	20	4.7	0	12	-	44	4.3	54	2.6	-	-	360
8-2	T	0940	-	29	140	5	5.8	0	23	-	14	6.0	77	0.9	-	-	360
Average				27	150	15	4.3 to 5.8	0	12	-	26	6.0	73	1.4	-	-	740

Station 254 - Located at outlet to McGrougans Lake bathing area.

Date Collected 1955	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Acidity Total Min. ppm	Hardness Total as CaCO ₃ ppm		Chloride ppm	D. O. %	5 Day BOD, ppm	M.P.N. per 100 ml.	Coliform
								Phenol ppm	Total ppm								
6-17	F	0745	-	24	210	45	4.7	0	2	-	16	6.9	81	1.2	-	-	430
7-14	Th	1135	-	30	100	10	4.8	0	10	-	16	5.5	72	2.4	-	-	930
8-2	T	1000	-	29	140	10	5.6	0	7	-	4	4.6	59	1.9	-	-	-
8-24	W	1430	-	25	240	20	4.3	-	0	-	20	3.6	43	2.3	-	-	24,000
8-29	M	1600	-	27	240	15	4.0	0	1	25	10	1.5	19	1.1	-	-	4,300
Average				27	190	20	4.0 to 5.6	0	4	-	13	4.4	55	1.8	-	-	7,400

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station No. 255 - Located on Cape Fear River approximately 300 ft. upstream from U.S. Lock #3. Drainage Area (Sq. Mi.) 4,810

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
							Phenol. ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
1955															
6-17	F	0850	650*	25*	170*	40*	0*	24*	24*	8*	6.2*	70*	2.6*	11,000*	1,200*
6-27	M	1405	1,540	26	140	30	0	30	24	13	6.5	79	3.6	37,000	21,000
7-12	T	1357	7,000	26	340	140	0	9	20	6	5.3	40	2.2	100,000	19,000
7-26	T	1730	1,760	30	620	90	0	16	18	7	4.7	62	1.9	23,000	410,000
8-3	W	0650	2,990	28	460	100	0	13	16	6	5.0	63	2.0	40,000	9,300
9-15	Th	1655	3,080	23	210	25	0	10	12	8	6.4	85	1.1	23,000	5,500
Average			3,274	27	360	75	0 to 0	16	18	8	5.6	66	2.2	45,000	93,000

* Excluded from average as Station below lock was not taken on this day.

Station No. 256 - Located on Cape Fear River approximately 300 ft. downstream from U. S. Lock #3.

Drainage Area (sq. mi.) 4,810																
6-27	M	1450	1,540	26	120	20	7.1	0	30	28	13	7.2	88	2.6	27,000	99,000
7-12	T	1423	7,000	26	130	55	6.3	0	10	20	6	6.3	77	2.0	95,000	19,000
7-26	T	1800	1,760	29	620	90	6.9	0	15	16	7	4.6	59	1.2	14,000	6,000
8-3	W	0730	2,990	28	480	70	6.5	0	11	16	6	5.3	67	1.8	36,000	60,000
9-15	Th	1722	3,080	23	240	25	6.0	0	10	10	7	6.9	79	1.1	23,000	17,000
Average			3,270	26	320	50	6.0 to 7.1	0	15	18	8	6.1	74	1.7	39,000	40,000

7.1

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 257 - Located at outlet to Pages Lake bathing area.															Drainage Area (sq. mi.)
Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. lbs/day 20°C 25°C per 100 ml.	Coliform M.P.N.
1955															
6-27	M	1535	-	26	80	20	5.7	-	8	14	9	7.0	85	1.5	43,000
8-24	W	1450	-	25	400	45	5.0	-	2	20	8	3.2	38	2.8	9,300
Station 258 - Located on Cape Fear River 6.8 miles below U. S. Lock #3 and 15.9 miles above U. S. Lock #2 to determine quality of water in river.															
6-27	M	1615	1,580	26	140	20	7.1		33	30	12	7.4	90	2.2	200,000
8-3	W	0825	2,900	28	440	70	6.7	0	15	18	7	5.7	72	1.4	34,000
Note: Flow is mean daily.															
Station 259 - Located on Cape Fear River at a point approximately 500 feet above outfall from Town of Elizabethtown.															Drainage Area (sq. mi.) 4,980
6-17	F	0720	720	26	180	50	6.9	0	24	18	5	6.2	76	1.3	260
6-23	T	1443	1,870	25	130	20	7.1	0	29	19	8	5.6	67	2.2	8,200
7-21	Th	0950	1,900	27	700	225	6.3	0	12	14	3	4.4	54	1.1	6,000
Average			1,500	26	340	100	6.3 to 7.1	0	22	17	5	5.4	66	1.5	4,800
Station 260 - Located on Cape Fear River approximately 300 feet upstream from U. S. Lock #2 and 1.4 miles below domestic sewage outfall from Town of Elizabethtown.															Drainage Area (sq. mi.) 4,990
6-17	F	0900	720	26	180	55	6.9	0	24	20	7	6.7	82	2.0	8,600
6-23	T	1300	1,870	25	110	20	6.9	0	27	19	7	5.6	67	2.0	12,500
7-21	Th	0703	1,900	27	760	310	6.4	0	12	11	3	4.4	54	1.7	910
Average			1,500	26	360	130	6.4 to 6.9	0	21	17	6	5.6	68	1.9	7,300

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station No. 261 - Located on Cape Fear River approximately 300 ft. below U. S. Lock #2. Drainage Area (sq.mi.) 4,990

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
							Phenol.	Total			ppm	% Sat.	20 C	25 C	
1955							ppm	ppm							
6-17	F	0830	720	26	175	46	0	24	19	5	7.3	89	2.9	14,000	9,300
6-28	T	1420	1,870	26	135	17	0	25	20	8	7.1	87	2.1	27,000	13,200
7-21	Th	0630	1,900	27	740	270	0	12	9	4	6.2	77	1.5	19,000	3,600
Average			1,500	26	360	110	6.4 to 6.9	20	16	6	6.9	84	2.2	20,000	8,700

Station No. 262 - Located on Brown Creek upstream from pollution from abattoirs located on this stream

Drainage Area (sq.mi.) 14.1

6-15	W	0830	2.2	18	90	35	6.7	0	45	25	7	6.5	68	1.2	18	4,300
6-23	Th	0629	3.4	22	120	20	6.9	0	20	25	4	5.4	61	1.3	30	150,000
7-13	W	1430	17	24	210	15	6.6	0	18	31	7	6.3	74	1.6	180	43,000
7-29	F	1020	2.5	25	180	10	6.5	0	14	23	6	5.3	63	2.9	49	-
Average			6.3	22	150	20	6.5 to 6.9	24	26	6	5.9	67	1.8	69	69	66,000

Station No. 262A - Located on Browns Creek approximately 1.5 miles below industrial waste outfall for Bladen Packing Co. and 500 ft. above industrial waste outfall from Butler Market Abattoir.

Drainage Area (sq. mi.) 17.3

6-15	W	0905	2.2	22	140	10	6.3	0	48	34	7	5.1	58	3.6	53	9,300
6-23	Th	0710	4.1	25	100	25	6.9	0	23	28	5	6.1	73	5.9	160	4,300
7-13	W	1505	12	27	160	15	6.5	0	24	31	7	4.6	57	7.7	620	15,000
7-29	F	0505	2.7	28	180	6	6.6	0	23	33	6	3.9	49	5.3	97	-
Average			5.3	26	150	15	6.3 to 6.9	30	32	6	4.9	59	5.6	230	230	9,500

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 263 - Located on Browns Creek approximately 200 feet below industrial waste outfall for Butler Market Abattoir. Drainage Area (sq. mi.) 17.3

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100ml.
1955																
6-15	W	0925	2.2	22	130	15	6.2	0	32	31	7	5.2	59	4.8	71	4,300
6-23	Th	0735	4.1	25	100	20	6.9	0	24	25	5	5.9	70	5.1	140	24,000
7-13	W	1520	12	27	140	20	6.5	0	24	30	7	4.4	54	6.3	510	24,000
7-29	F	0525	2.7	28	210	10	6.4	0	18	34	12	3.3	42	5.4	98	-
Average			5.3	26	150	15	6.2 to 6.9	0	25	30	8	4.7	56	5.4	200	17,000

Station 264 - Located on Browns Creek below all sources of pollution on this stream and 1.7 miles above confluence with Cape Fear River. Drainage Area (sq. mi.) 17.7

Date	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100ml.
6-15	W	0945	2.2	20	130	25	6.2	0	23	34	8	7.1	77	1.2	18	930
6-23	Th	0745	4.6	25	90	20	6.9	0	23	22	6	6.0	71	2.3	71	4,300
7-13	W	1545	12	26.5	130	10	6.7	0	26	32	8	5.1	63	5.9	480	15,000
7-29	F	0545	3.2	27	170	10	6.8	0	25	30	10	5.2	64	2.7	58	-
Average			5.5	25	130	15	6.2 to 6.9	0	24	30	8	5.9	69	3.0	160	6,700

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) -

Station 265 -- Located at bathing area at Jones Lake at center buoy and approximately 50 feet from each side.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity Phenol. Total		Acidity Mineral Total		Hardness As CaCO ₃ ppm	Chloride ppm		L. O. % Sat.	
6-16	Th	0820	-	25	46	22	3.9	0	0	3	8	8	5	7.3	87		
6-27	M	1335	-	27	55	8	4.3	0	0	0	6	14	7	6.5	80		
7-5	T	1835	-	30	25	7	4.3	0	0	0	6	15	6	7.0	92		
Average				27	42	10	3.9 to 4.3	0		1	7	12	6	6.9	86		

Date Collected	Day	Time	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Buoy Center Coliform		Buoy L Coliform		Buoy R Coliform	
					MPN/100 ml.		MPN/100 ml.		MPN/100 ml.	
6-16	Th	0820	0.3	-	36	91	91	91	91	91
6-27	M	1335	0.5	-	11	23	23	23	3.6	3.6
7-5	T	1835	0.9	-	3.6	23	23	23	23	23
Average			0.6	-	17	46	46	46	39	39

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 265A - Located at outlet to Jones Lake.

Drainage Area (sq. mi.)

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Acidity		Hardness as CaCO ₃ ppm	Chloride ppm		D.O. ppm		5 Day B.O.D. 20°C ppm		Coliform M.P.N. per 100 ml.
								Mineral ppm	Total ppm		ride ppm		% Sat.		25°C		
6-16	Th	0815	-	25	-	-	3.8	5	11	10	8	7.5	89	0.9	-	-	36
6-27	M	1340	-	27	70	7	4.2	0	6	11	7	7.8	96	0.5	-	-	93
7-5	T	-	-	30	20	7	4.3	0	6	15	6	7.2	95	1.2	-	-	93
Average				27			3.8 to 4.3	2	8	12	7	7.5	93	0.9			74

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 266 - Located at White Lake bathing area at center and end of Crystal Pier and Goldston Pier. Drainage Area (sq. mi.)

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Acidity		Hardness As CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20° C
								Mineral ppm	Total ppm			ppm	% Sat.	
6-16	Th	1045	-	25	11	15	4.1	1	8	16	8	8.1	96	0.5
6-27	M	1245	-	26	14	6	4.6	0	6	14	8	8.0	98	0.9
7-5	T	1645	-	30	1	6	4.6	0	5	16	11	7.6	100	1.1
7-13	W	1150	-	28	20	10	4.6	0	9	17	10	7.9	100	0.2
9-26	M	1100	-	24	21	2	5.2	0	3	17	8	7.9	93	0.7
Average				27	13	8	4.1 to 5.2	0	6	16	9	7.9	97	0.7

Date Collected 1955	Day	Time	Crystal Pier End		Crystal Pier Middle		Goldston Pier End		Goldston Pier Middle	
			Coliform MPN/100 ml.		Coliform MPN/100 ml.		Coliform MPN/100 ml.		Coliform MPN/100 ml.	
6-16	Th	1045	36		150		36		150	
6-27	M	1245	430		150		150		230	
7-5	T	1645	93		93		93		240	
7-13	W	1150	2,400		2,400		2,400		2,400	
9-26	M	1100	240		240		430		930	
Average			640		610		620		790	

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 266A -- Located at White off pier at FFA Camp.

Drainage Area (sq. mi.)

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Mineral ppm	Acidity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. %	5 Day B.O.D. ppm 20°C	Coliform M.P.N. 25°C per 100ml.
1952														
6-16	Th	1015	-	25	4	10	5.0	0	4	14	7	8.0	0.5	73
6-27	M	1200	-	26	14	7	4.7	0	5	18	9	7.8	0.4	930
7-5	T	1715	-	32	1	15	4.6	0	6	16	10	7.4	1.7	240
7-13	W	1230	-	28	16	7	4.6	0	8	22	8	7.1	0.8	240
9-26	M	1145	-	23	110*	10	4.7	0	3	19	7	7.8	0.5	240
Average				27	9	10	4.6 to 5.0	0	5	18	8	7.6	0.8	340

* Excluded from average as high color due to decaying algae.

Station 266B -- Located at White Lake at the approximate location of the outlet.

7-5	T	1745	-	31	15	6	4.6	0	6	15	9	7.4	1.2	430
7-13	W	1305	-	28	24	15	4.6	0	9	16	10	5.8	2.4	4,300
9-26	M	1210	-	24	26	2	4.7	0	4	17	8	7.6	0.6	240
Average				28	22	8	4.6 to 4.7	0	6	16	9	6.9	1.4	1,700

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 5,180

Station 267 -- Located on Cape Fear River 22.4 miles below U. S. Lock #2 and 8.1 miles above U. S. Lock #1 to obtain river quality.

Date Col- lected	Day	Time	Mean Daily Dis- charge cfs		Temp. °C	Color ppm	Turbid- ity ppm	pH Range	Alkalinity Phenol. ppm		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm		5 Day B.O.D. ppm 20°C		Coliform M.P.N. per 100 ml.
1955																	
6-20	M	1345	690		27	220	70	7.1	0	0	23	5	7.0	86	2.1	9,800	930
6-29	W	1743	1,380		27	105	17	7.0	0	0	23	8	7.1	88	2.2	20,000	1,100
7-21	Th	1133	1,820		29	680	350	6.4	0	0	12	2	5.0	64	1.6	20,000	530
Average			1,300		28	340	150	6.4 to 7.1	0	0	19	5	6.4	79	2.0	17,000	850

Drainage Area (sq. mi.) 5,220

Station 268 -- Located on Cape Fear River approximately 0.25 of a mile above U. S. Lock #1 and at raw water intake for City of Wilmington.

6-20	M	1625	710		27	220	70	7.4	0	0	23	7	5.8	72	2.2	11,000	370
6-29	W	1839	1,400		26	120	25	6.6	0	0	14	8	8.0	98	1.7	16,000	1,100
7-21	Th	1105	1,790		29	580	290	6.5	0	0	14	4	5.0	64	1.5	18,000	600
Average			1,300		27	300	130	6.5 to 7.4	0	0	17	6	6.3	78	1.8	15,000	690

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 269 - Located on Cape Fear River approximately 300 feet below U. S. Lock #1. Drainage Area (sq. mi.) 5,220

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.	
1955																
6-20	M	1605	710	27	240	55	6.9	0	26	20	4	6.9	85	1.0	4,800	600
6-29	W	1808	1,400	27	100	30	6.8	0	18	20	10	7.7	95	1.7	16,000	2,300
7-21	Th	1233	1,790	28	580	280	6.5	0	14	12	2	5.9	75	1.5	18,000	300
Average			1,300	27	300	120	6.5 to 6.9	0	19	17	5	6.8	85	1.4	13,000	1,100

Date Collected	Day	Time	Iron
1955			
6-20	M	1605	-
6-29	W	1808	-
7-21	Th	1233	6.0

Station 269 - Located on Cape Fear River approximately 300 feet below U. S. Lock #1. Drainage Area (sq. mi.) 5,220

Station 269 - Located on Cape Fear River approximately 300 feet below U. S. Lock #1. Drainage Area (sq. mi.) 5,220

Station 269 - Located on Cape Fear River approximately 300 feet below U. S. Lock #1. Drainage Area (sq. mi.) 5,220

Station 269 - Located on Cape Fear River approximately 300 feet below U. S. Lock #1. Drainage Area (sq. mi.) 5,220

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 5,280

Station 270 - Located on Cape Fear River near Mile Board 3L near raw water intake for Riegel Paper Corp. and above effluent from industrial waste lagoon.

Date Collected	Day	Time	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
							Suspended ppm	Dissolved ppm		Phenol. ppm	Total ppm		
1955													
6-21	T	1350	920	26	240	40	20	104	7.1	0	23	18	7
7-26	T	1325	1,500	29	550	90	27	123	6.5	0	13	22	2
8-30	T	1045	5,100	25	360	30	32	86	6.1	0	12	16	6
Average			2,500	27	380	55	26	104	6.1 to 7.1	0	16	19	5

Date Collected	Day	Time	D. O. %		5 Day B.O.D.		Coliform M.P.N. per 100 ml.	Sulphates		Iron
			ppm	Sat.	ppm	lbs/day		ppm	ppm	
1955					20°C	25°C				
6-21	T	1350	6.6	80	2.6	20,000	7,600	20	2.0	
7-26	T	1325	5.4	69	0.9	9,100	44,000	30	6.0	
8-30	T	1045	3.9	46	2.3	79,000	4,300	-	3	
Average			5.3	65	1.9	36,000	19,000		4	

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 270 - Located on Cape Fear River near Mile Board 31 near raw water intake for Riegel Paper Corp. and above effluent from industrial waste lagoon. Drainage Area (sq. mi.) 5,280

Date Collected	Tide & Time	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
						Suspended ppm	Dissolved ppm		Phenol ppm	Total ppm		
1956 6-12	T 1845	1,200	24	260	45	7	96	6.8	0	103	12	7
6-14	Th 1545	1,150	26	240	25	24	56	6.8	0	80	14	5
7-2	M 1750	1,700	30	200	25	30	58	6.9	0	88	16	7
7-4	W 1200	1,300	30	140	15	10	54	6.9	0	64	19	7
7-9	M 1255	1,300	30	130	8	11	76	7.0	0	87	19	6
7-24	T 1550	10,000*	27*	920*	220*	36*	206*	6.6*	0	242*	11*	1*
Average		1,300	28	190	25	16	68	6.6 to 7.0	0	84	16	6

Date Collected	Tide & Time	D.O. %	5 Day B.O.D.		Coliform M.P.N. per 100 ml.	Sulphates ppm	Iron ppm	Tide
			ppm	lbs/day				
1956 6-12	T 1845	6.1	1.2	9,700	750	20	5.5	0.43 ebb
6-14	Th 1545	6.2	1.4	11,000	1,500	20	3.0	0.63 flood
7-2	M 1750	5.9	2.6	30,000	2,100	10	2.0	0.78 flood
7-4	W 1200	6.4	2.8	25,000	9,300	20	1.2	0.48 ebb
7-9	M 1255	6.6	2.1	18,000	230	20	2.0	-
7-24	T 1550	5.5*	2.2*	150,000*	2,300*	20*	5.5*	-
Average		6.2	2.0	19,000	2,800	20	2.7	-

* Excluded from average because of unseasonable flow.

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 271 -- Located on Livingston Creek above backwater from Cape Fear River Drainage Area (sq. mi.) 113
and above industrial waste from Acme Fertilizer Company.

Date Col. 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D.	
							Range	ppm	Phenol, ppm	Total ppm			ppm Sat.	% ppm	20°C	25°C
7-1	F	0730	32	22	70	5	5.9	0	0	7	60	11	6.5	74	0.6	130
7-11	M	1540	35	28	110	7	7.1	0	0	31	45	7	6.1	77	0.5	120
10-20	Th	0940	41	14	180	8	6.9	0	0	28	48	8	7.4	71	1.0	280
Average			36	21	120	7	5.9 to 7.1	0	0	22	51	9	6.7	74	0.7	180

Date Col. 1955	Day	Time	Coliform M.P.N. per 100 ml.	Fluoride ppm	Phosphate ppm
7-1	F	0730	930	-	-
7-11	M	1540	730	.4	0
10-20	Th	0940	930	.1	0
Average			860		

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 272 - Located on Livingston Creek at a point approximately 1,000 ft. below industrial waste outfall from Acme Fertilizer Mill. Drainage Area (sq. mi.) 128

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. % ppm Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C
7-1 1955	F	0840	-	24	-	-	6.2	0	15	10	5.6	1.2	-
7-11 1955	M	1635	-	28	120	8	6.3	0	20	10	3.5	2.6	-
10-20	Th	1015	-	15	160	6	6.5	0	23	7	6.2	1.2	-
Average			-	22			6.2 to 6.5	0	19	9	5.1	1.7	-

Date	Day	Time	Coliform M.P.N. per 100 ml.	Fluoride ppm	Phosphate ppm
7-1 1955	F	0840	430	-	-
7-11 1955	M	1635	1,500	.9	0
10-20	Th	1015	360	.1	0
Average			760		

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 130

Station 273 - Located on Livingston Creek at a point below industrial waste treatment plant and 0.5 of a mile above confluence with Cape Fear River.

Date Collected	Day	Time	Discharge cfs	Temp °C	Color ppm	Turbidity ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D.O.		5 Day B.O.D.	
							Range	Phenol ppm	Total ppm				ppm	% Sat.	ppm 20°C	lbs/day 25°C
7-11-55	F	1030	-	27	140	30	7.0	0	20		14	10	6.9	85	1.2	-
7-11-55	M	1735	-	29	180	15	6.6	0	21		31	10	4.0	51	2.6	-
10-20	Th	1045	-	16	180	8	6.1	0	16		35	7	5.3	53	1.1	-
Average			-	24	170	20	6.1 to 7.0	0	19		27	9	5.4	63	1.6	-

Date Collected	Day	Time	Coliform M.P.N. per 100 ml.	Fluoride		Phosphate	
				ppm		ppm	
7-11-55	F	1030	15,000	-		-	
7-11-55	M	1735	7,300	3		0	
10-20	Th	1045	15,000	2.2		0	
Average			12,000				

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 274 - Located on Cape Fear River at Mile Board 28, 2 miles below effluent from Drainage Area (sq. mi.) 5,410
industrial waste from Riegel Paper Corp. and 1.7 miles below mouth of
Livingston Creek.

Date Collected	Day	Time & Tide	Mean Daily		Temp °C	Color ppm	Turbidity ppm	Solids (ppm)		Total	pH Range	Alkalinity Phenol.		Hardness Total as CaCO ₃ ppm	Chloride ppm
			Discharge cfs	Discharge				Suspended	Dissolved			ppm	ppm		
6-21	T	1430 H	940		27	340	35	20	166	186	6.7	0	24	28	19
7-26	T	1235 L	1,500		29	530	140	25	144	169	6.5	0	14	20	5

Date Collected	Day	Time & Tide	D. O. %	5 Day B.O.D. ppm	Coliform McP.Ne per 100 ml.	Sulphate ppm	Resin Acid Scaps ppm	Fluoride ppm	Phosphate ppm
			Sat. ppm	20°C	25°C				
6-21	T	1430 H	0.6	7	3.8	24,000	0	0	0
7-26	T	1235 L	5.1	65	3.2	32,000	0	0	0

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 274 - Located on Cape Fear River at Mile Board 28, 2 miles below effluent from industrial waste lagoon for Riegel Paper Corp. and 1.7 miles below mouth of Livingston Creek. Drainage Area (sq. mi.) 5,410

Date Collected	Tide & Time	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Suspended ppm	Solids Dis-solved ppm	Total ppm	pH Range	Alkalinity Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm
1956 6-12	T 1805M	1,500	24	370	60	29	89	118	6.6	0	13	13	8
6-14	Th 1510M	1,300	26	330	33	34	113	147	6.7	0	23	19	18
7-2	M 1710H	2,100	30	210	22	25	107	132	6.3	0	13	21	17
7-4	W 1120M	1,600	29	170	9	18	61	79	6.8	0	19	21	8
7-5	M 1215H	1,500	30	220	9	20	100	120	6.8	0	25	21	16
7-2	T 1505H	10,000*	27*	1,000*	230*	148*	110*	258*	6.6*	0*	12*	11*	2*
Average		1,600	28	260	25	25	94	119	6.3 to 6.8	0	19	19	13

Date Collected	Tide & Time	I. O. ppm	% Sat.	5 Day B.O.D. ppm	20°C	5 Day B.O.D. ppm	25°C	Coliform MPN/100 ml.	Sulphate ppm	Acid Soaps ppm	Fluoride ppm	Phosphate ppm	Tide
1956 6-12	T 1805M	5.4	64	1.9	19,000	4,300	20	20	20	-	.3	0	0.36 ebb
6-14	Th 1510M	3.6	44	13	110,000	43,000	23	23	23	-	.9	0	0.56 flood
7-2	M 1710H	4.0	53	8.4	120,000	11,000	13	13	13	-	2.12	0	0.70 flood
7-4	W 1120M	5.2	67	2.5	27,000	1,500	15	15	15	-	.42	0	0.42 ebb
7-5	M 1215H	2.1	28	8.8	89,000	9,300	20	20	20	-	.4	0	
7-2	T 1505H	5.2*	64*	3.2*	220,000*	23,000*	20*	20*	20*	-	.3*	0*	
Average		4.1	51	6.9	73,000	14,000	20	20	20		0.8	0	

* Excluded from average because of unseasonable flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 275 -- Located on Cape Fear River at Mile Board 26, 4 miles below effluent Drainage Area (sq. mi.) 5,410 from Riegel Paper Corp. industrial waste lagoon.

Date Collected	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
		Discharge cfs	Discharge				Suspended	Dissolved		Phenol. ppm	Total ppm		
6-21	T 1500 H	940		27	350	40	10	157	6.7	0	26	25	18
7-26	T 1200 H	1,500		29	610	100	20	129	6.5	0	14	20	7

Date Collected	Time & Tide	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.	Sulphate ppm	Resin	
		ppm	% Sat.	ppm	lbs/day 25°C			Acid	Soaps
6-21	T 1500 H	0.7	9	2.3	15,000	1,100	20		0
7-26	T 1200 H	4.0	51	3.4	34,000	6,000	33		0

MAIN RIVER DRAINAGE AREA

Station 275 - Located on Cape Fear River at Mile Board 26, 4 miles below effluent from Drainage Area (sq. mi.) 5,410
Riegel Paper Corp. industrial waste lagoon.

Date Collected	Day	Time & Tide	Mean Daily Discharge cfs		Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity Phenol. Total ppm		Hardness as CaCO ₃ ppm	Chloride ppm
			Discharge	Turbidity				Suspended	Dissolved		ppm	ppm		
6-12	T	1740 H	1,500	50	25	360	50	24	98	6.6	0	17	16	12
6-14	Th	1420 M	1,300	35	26	340	35	32	103	6.5	0	19	20	17
7-2	M	1645 M	2,100	15	30	160	15	21	59	6.9	0	19	17	8
7-4	W	1020 M	1,600	6	29	140	6	11	81	6.8	0	21	24	13
7-9	M	1145 H	1,500	10	30	180	10	16	80	6.8	0	22	20	13
7-24	T	1425 H	10,000*	200*	27*	880*	200*	163*	119*	6.6*	0*	13*	12*	2*
Average			1,600	25	28	240	25	21	84	6.5 to 6.9	0	20	19	13

Date Collected	Day	Time & Tide	D.O. %	5 Day B.O.D. ppm	B.O.D. lbs/day at 25°C	Coliform M.P.N. per 100 ml.	Sulphate ppm	Resin Acid Soaps ppm	Tide
			Sat.	20°C	25°C				
6-12	T	1740 H	29	5.0	51,000	120,000	20	-	0.33 ebb
6-14	Th	1420 M	28	8.5	75,000	43,000	20	-	0.44 flood
7-2	M	1645 M	67	3.4	48,000	2,300	10	-	0.67 flood
7-4	W	1020 M	33	4.2	45,000	23,000	10	-	0.31 ebb
7-9	M	1145 H	32	4.2	43,000	9,300	10	-	-
7-24	T	1425 H	63*	3.2	220,000*	23,000*	20*	-	-
Average			3.0	5.1	52,000	40,000	10	-	-

* Excluded from average because of flood flow.

TABLE 23
ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 276 - Located on Cape Fear at Mile Board 24, 6 miles below effluent from Riegel Paper Corp. industrial waste lagoon and below entrance to thorofare. Drainage Area (sq. mi.) 5,420

Date Col-lected	Day	Time	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
							Suspended ppm	Dissolved ppm		Phenol. ppm	Total ppm		
6-22	W	1215M	1,500	27	320	42	17	132	6.5	23	25	13	
7-27	W	1217L	1,300	31	500	65	39	88	6.6	0	14	17	

Date Col-lected 1955	Day	Time & Tide	D. O. %	5 Day B.O.D. ppm		Coliform MPN/100 ml.	Sulphate ppm	Acid Soaps ppm	Resin ppm
				20°C	25°C				
6-22	W	1215M	1.8	25	1.8	18,000	25	0	
7-27	W	1217L	1.9	25	2.8	25,000	-	0	

MAIN RIVER DRAINAGE AREA

Station 276 - Located on Cape Fear at Mile Board 24, 6 miles below effluent from Riegel Paper Corp. industrial waste lagoon and below entrance to thorofare. Drainage Area (sq. mi.) 5,420

Date Collected	Day	Tide & Time	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
			Discharge cfs	Discharge cfs				Suspended	Dissolved		Phenol. ppm	Total ppm		
6-12	T	1715H	1,500	1,500	25	400	50	41	87	6.6	0	20	16	13
6-14	Th	1350M	1,300	1,300	26	300	30	35	91	6.5	0	18	18	17
7-2	M	1620M	2,100	2,100	30	180	15	11	86	6.7	0	20	18	13
7-4	W	0950H	1,600	1,600	30	200	6	8	107	6.6	0	15	24	14
7-9	M	1120M	1,500	1,500	30	140	20	14	82	6.8	0	22	20	11
7-24	T	1355H	10,000*	10,000*	27*	1,080*	240*	172*	105*	6.6*	0*	12*	13*	2*
Average			1,600	1,600	28	240	25	22	91	6.5 to 6.8	0	19	19	14

Date Collected	Day	Tide & Time	D. O. %	5 Day B.O.D. ppm	Coliform M.P.C.N. per 100 ml.	Sulphate ppm	Resin		Tide
			ppm	20° C	25° C		Acid	Soaps	
6-12	T	1715H	1.6	5.6	57,000	20	-	-	0.30 ebb
6-14	Th	1350M	2.2	5.9	52,000	20	-	-	0.39 flood
7-2	M	1620M	2.9	3.5	50,000	10	-	-	0.62 flood
7-4	W	0950H	1.9	3.8	41,000	10	-	-	0.27 ebb
7-9	M	1120M	2.4	3.4	34,000	20	-	-	-
7-24	T	1355H	5.0*	3.3*	220,000*	20*	-	-	-
Average			2.2	4.4	47,000	20	-	-	-

* Excluded from average because of flood flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 277 - Located on Cape Fear River at Mile Board 22, 8.0 miles below effluent from Riegel Paper Corp. industrial waste lagoon. Drainage Area (sq. mi.) 5,420

Date Collected 1955	Day	Mean Daily			Turbidity		Solids		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
		Time & Tide	Discharge cfs	Temp. °C	Color ppm	Intensity ppm	Suspended ppm	Dissolved ppm		Phenol. ppm	Total ppm		
6-22	W	1245H	1,500	27	310	30	11	149	6.4	0	23	25	19
7-27	W	1255L	1,300	31	520	75	31	138	6.5	0	14	19	7

Date Collected 1955	Day	Time & Tide	D. O. %	5 Day B.O.D.		Coliform MPN/100 ml.	Resin	
				ppm 20°C	ppm lbs/day 25°C		Acid	Soaps
6-22	W	1245H	0.2	2	2.5	1,600	23	0
7-27	W	1255L	3.3	44	2.3	430	-	0

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 5,420

Station 277 - Located on Cape Fear River at Mile Board 22, 8.0 miles below effluent from Riegel Paper Corp. industrial waste lagoon.

Date Collected	Day	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
			Discharge cfs	idity				Suspended	Dissolved		Phenol. ppm	Total ppm		
6-12	T	1650 M	1,500	55	25	400	55	38	96	6.6	0	13	19	13
6-14	Th	1330 M	1,300	35	26	320	35	28	88	6.3	0	16	16	16
7-2	M	1600 M	2,100	15	30	180	15	14	101	6.6	0	16	21	13
7-4	W	0925 H	1,600	8	30	180	8	9	78	6.8	0	20	23	8
7-9	M	1105 H	1,500	15	29	210	15	11	85	6.8	0	22	20	11
7-24	T	1325 H	10,000*	240*	27*	1,080*	240*	178*	96*	6.6*	0*	12*	11*	4*
Average			1,600	25	28	260	25	20	90	6.3 to 6.8	0	17	20	12

Date Collected	Day	Time & Tide	D. O. %	5 Day B.O.D.		Coliform MPN/100 ml.	Sulphate ppm	Resin Acid Soaps ppm	Tide
			ppm	20° C	25° C				
6-12	T	1650 M	1.1	3.9	39,000	93,000	20	-	0.27 ebb
6-14	Th	1330 M	2.0	4.8	42,000	75,000	20	-	0.36 flood
7-2	M	1600 M	2.3	3.4	48,000	9,300	10	-	0.60 flood
7-4	W	0925 H	3.5	2.1	23,000	230,000	10	-	0.24 ebb
7-9	M	1105 H	1.9	2.3	23,000	730	10	-	
7-24	T	1325 H	5.0*	2.7*	180,000*	4,300*	20*		
Average			2.2	3.3	35,000	82,000	10		

* Excluded from average due to extreme flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 278 - Located on Cape Fear River at Mile Board 20, 10 miles below effluent from Riegel Paper Corp. industrial waste lagoon. Drainage Area (sq. mi.) 5,420

Date Collected	Day	Time & Tide	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
							Suspended	Dissolved		Phenol ppm	Total ppm		
6-23	Th	1435 H	-	27	310	55	25	117	6.8		24	25	10
7-27	W	1346 M	-	30	430	50	46	123	6.4	0	13	19	11

Date Collected	Day	Time & Tide	D.O. %	5 Day B.O.D.		Coliform MPN/100 ml.	Sulphate ppm	Resin	
				ppm	lbs/day			Acid	Soaps
6-23	Th	1435 H	4.2	1.8	-	4,800	23		0
7-27	W	1346 M	3.4	3.1	-	1,500	-		0

MAIN RIVER DRAINAGE AREA

Station 278 - Located on Cape Fear River at Mile Board 20, 10 miles below effluent Drainage Area (sq. mi.) 5,420
from Riegol Paper Corp. industrial waste lagoon.

Date Collected Day 1956	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm
		Discharge cfs	idity ppm				Suspended	Dissolved		Phenol. ppm	Total ppm		
6-12 T	1630 M	1,500	45	25	360	45	12	95	6.6	0	15	17	11
6-14 Th	1300 M	1,300	40	26	320	40	20	84	6.5	0	15	14	11
7-2 M	1540 M	2,100	6	29	180	6	12	74	6.8	0	20	19	10
7-4 W	0855 H	1,600	8	29	185	8	15	78	6.8	0	19	21	8
7-9 M	1040 H	1,500	6	29	180	6	3	102	6.8	0	28	23	14
7-24 T	1255 H	10,000*	240*	27*	1,020*	240*	185*	100*	6.7*	0	14*	13*	3*
Average		1,600	20	28	250	20	12	87	6.5 to 6.8	0	19	19	11

Date Collected Day 1956	Time & Tide	D. O. %	5 Day B.O.D.		Coliform MPN/100 ml.	Sulphate ppm	Resin	
			ppm 20°C	lbs/day 25°C			Acid	Soaps
6-12 T	1630 M	2.7	1.8	18,000	43,000	20	-	-
6-14 Th	1300 M	3.0	3.9	34,000	23,000	20	-	-
7-2 M	1540 M	3.4	2.1	30,000	4,300	20	-	-
7-4 W	0855 H	2.8	2.3	25,000	43,000	10	-	-
7-9 M	1040 H	0.2	4.7	48,000	9,300	20	-	-
7-24 T	1255 H	4.8*	2.9*	200,000*	23,000*	20*	-	-
Average		2.4	3.0	31,000	25,000	20		

* Excluded from average due to extreme flow.

TABLE 23

ANALYTICAL RESULTS

MAJH RIVER DRAINAGE AREA

Station 279 - Located on Cape Fear River at Mile Board 18, 12 miles below effluent from Drainage Area (sq. mi.) 5,470 Riegel Paper Corp. industrial waste lagoon and 2.3 miles upstream from mouth of Black River.

Date Col-lected	Time & Tide	Mean Daily Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm
6-23-55	Th 1503 H	~	27	300	40	Sus-17 Dis-133 Total 150	6.7	0	22	13
6-14-56	Th 1235 M	1,300	26	320	35	19	6.5	0	17	13
7-2-56	M 1520 H	2,100	29	280	15	7	6.7	0	21	16
7-4-56	W 0825 H	1,600	29	180	6	6	6.7	0	26	11
7-9-56	M 1020 M	1,500	30	180	3	14	6.8	0	24	11
7-24-56	T 1140 H	10,000*	27*	780*	160*	21*	6.6*	0	13*	3*
Average		1,600	29	240	15	12	6.5 to 6.8	0	22	13

Date Col-lected	Time & Tide	D. O. %	5 Day B.O.D. ppm	lbs/day 25°C	Coliform MPN/100 ml.	Sulphate ppm	Resin Acid Soaps ppm
6-23-55	Th 1503 H	31	1.8	-	300	20	0
6-14-56	Th 1235 M	28	1.8	16,000	23,000	20	-
7-2-56	M 1520 H	12	3.2	45,000	23,000	20	-
7-4-56	W 0825 H	17	2.2	24,000	7,500	40	-
7-9-56	M 1020 M	20	3.2	32,000	4,300	10	-
7-24-56	T 1140 H	62*	2.3*	160,000*	2,300*	20*	-
Average		19	2.6	29,000	14,000	20	

* Excluded from average due to extreme flow.

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 1.17

Station 280 - Located on Black River at a point above effluent from Angier Sewage Treatment Plant and below storm drainage from business district.

Date Collected	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
6-30	Th	0.04	21	180	30	6.7	0	24	12	7.9	1.2	1
7-15	F	1.2	26	90	35	6.8	0	24	7	5.2	6.0	49
8-1	M	.6	30	240	35	6.4	0	16	8	4.6	3.2	13
8-31	W	1.2	25	280	20	6.6	0	20	5	4.1	3.4	28
Average		0.8	26	200	30	6.4 to 6.8	0	21	8	5.5	3.5	23

Drainage Area (sq. mi.) 2.53

Station 281 - Located on Black River at a point approximately 0.5 of a mile below the effluent from sewage treatment plant at Angier.

6-30	Th	1010	0.05	20	20	7.1	0	155	33	0.8	9	5	930,000
7-15	F	0600	2.6	23	10	6.5	0	22	10	3.4	4.1	72	43,000
8-1	M	1700	2.2	26	45	6.7	0	29	12	2.0	4.6	68	240,000
8-31	W	1215	2.2	24	-	6.5	0	27	8	2.7	4.0	59	24,000
Average		1.8	23	200	25	6.5 to 7.1	0	59	16	2.2	7.2	51	310,000

Drainage Area (sq. mi.) 4.30

Station 282 - Located on Cape Fear River at a point approximately 1.6 miles below effluent from sewage treatment plant Angier.

6-30	Th	1010	0.06	26	180	6.7	0	38	34	5.2	63	>3#	4,300
7-15	F	0700	.3	29	40	6.5	0	12	30	3.4	44	5	9,300
8-1	M	1715	16	27	20	6.5	0	25	24	4.5	56	640	9,300
8-31	W	1310	5	25	10	6.5	0	12	34	5.4	64	140	2,300
Average		5.3	27	400	65	6.5 to 6.7	0	22	31	4.6	57	260	6,300

F - based from average - indeterminate.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 283 -- Located on Black River above Dunn's west side sewage treatment plant.

Drainage Area (sq. mi.) 43.6

Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	25°C lbs/day	Coliform M.P.N. per 100 ml.
8-1	M	1410	41	26	280	25	5.6	0	21	12	9	4.5	55	1.8	500	4,300
8-31	W	0935	73	24	340	6	5.1	0	4	20	5	3.5	41	1.7	840	910
9-26	M	1645	--	21*	620*	6*	5.9*	0*	10*	12*	7*	3.7*	41*	2.8*	--	4,300*
10-4	T	0940	45	20	340	6	5.5	0	7	20	8	4.1	45	1.8	550	9,300
Average			53	23	320	10	5.1 to 5.9	0	11	17	7	4.0	47	1.8	630	4,800

* Excluded from average as abnormal high flow could not be determined.

Station 284 -- Located on Black River at a point approximately 1.6 miles below Dunn's west side sewage treatment plant.

Drainage Area (sq. mi.) 49.2

8-1	M	1510	46	26	240	20	5.7	0	18	32	10	2.6	32	2.1	650	43,000
8-31	W	0700	82	24	340	8	5.3	0	4	20	6	2.9	34	1.9	1,100	43,000
9-26	M	1455	--	21*	420*	5*	5.3*	0*	5*	14*	7*	2.3*	26*	3.0*	--	24,000*
10-4	T	1100	51	20	320	5	5.5	0	7	20	10	2.6	28	1.8	620	24,000
Average			60	23	300	10	5.3 to 5.7	0	10	24	9	2.7	31	1.9	790	37,000

* Excluded from average as abnormal high flow could not be determined.

Station 285 -- Located on Mingo Swamp above effluent from Dunn's east side sewage treatment plant.

Drainage Area (sq. mi.) 31.1

6-30	Th	1200	0.7*	22*	270*	10*	6.0*	0*	21*	18*	11*	3.4*	39*	0.8*	4*	1,500*
7-15	F	0830	52	Stream over banks -- no sample collected -- abnormal high flow omitted from average.												
8-1	M	1450	11	26	360	20	5.5	0	24	32	12	2.7	33	2.0	150	24,000
8-31	W	1000	24	24	400	6	5.3	0	4	24	7	2.7	32	1.8	290	910
9-26	M	1705	25	21	420	5	5.5	0	7	16	8	2.2	24	2.6	440	1,500
10-4	T	1000	23	20	340	5	5.7	0	6	24	9	2.6	28	1.8	280	4,300
Average			21	23	380	9	5.3 to 6.0	0	10	24	9	2.6	29	2.1	290	7,700

* Excluded from average because of unseasonable low flow.

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 7.75

Station 286 - Located on Stoney Run approximately 1.9 miles below industrial waste effluent from Wellons Candy Co., and 1.0 mile above effluent from Dunn's east side sewage treatment plant

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.	
12-5																
6-30	Th	1220	0.05*	23*	340*	40*	6.3*	0	46*	26*	12*	1.5*	17*	4.1*	1*	4,300*
7-15	F	0835	19	Stream	over banks	-	-	-	-	-	-	-	-	-	-	-
8-1	M	1140	11	27	340	10	6.4	0	35	32	11	3.0	37	4.8	360	24,000
8-31	W	0625	3.7	25	260	15	6.1	0	13	28	7	3.1	37	2.9	72	4,300
9-26	M	1725	4.2	22	340	10	6.0	0	11	14	12	4.8	55	4.2	120	43,000
10-4	T	1035	5.6	20	340	15	5.9	0	15	20	12	3.9	42	3.0	110	9,300
Average			6.1	24	320	15	5.9 to 6.4	0	19	24	11	3.7	43	3.7	170	20,000

* Excluded from average because of unseasonable low flow.

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 287 - Located on Mingo Swamp 3.1 miles below effluent from
Dunn's east side sewage treatment plant. Drainage Area (sq. mi.) 50.2

Date	Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-30		Th	1255	2.1*	23*	320*	70*	6.5*	0*	23*	20*	15*	2.2*	25*	3.0*	43*	4,300*
7-25		F	6805	94	Stream	ever	banks	- no sample	collected	- abnormal	high flow	omitted	from average				
8-1		M	1420	22	26	280	20	5.9	0	17	26	12	3.6	44	2.5	370	93,000
8-31		W	0635	53	24	320	5	5.6	0	8	32	6	3.0	35	2.5	890	24,000
9-1		M	1740	58	22	420	5	5.7	0	9	14	9	2.9	33	2.9	1,100	9,300
9-1		T	1045	48	20	400	6	5.6	0	5	28	11	3.0	33	1.6	520	24,000
Average				45	23	360	9	5.6 to 6.5	0	10	25	10	3.1	36	2.4	720	38,000

* Excluded from average because of unseasonable low flow.

Station 288 - Located on South River below all sources of pollution
from Town of Angier and Dunn. Drainage Area (sq. mi.) 143

8-1	M	1535	52	26	420	20	5.5	0	25	20	11	2.0	24	1.6	560	9,300
8-31	W	0725	280	24	380	2	5.5	0	6	20	5	2.3	27	1.6	3,000	910
9-26	M	1800	230	22	-	-	5.4	0	8	14	8	1.6	18	2.5	3,900	360
10-4	T	1120	105	20	400	2	5.2	0	4	20	10	1.6	17	1.3	920	230
Average			167	23	400	8	5.2 to 5.5	0	11	19	9	1.9	22	1.8	2,100	2,700

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 276

Station 288A - Located on South River 23.1 miles below station 288 on this stream and 1.8 miles above Mill Creek containing effluent from septic tank at Town of Roseboro.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total Mineral ppm	Acidity ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.
1955														
9-30	F	0755	580	22	400	3	4.3	-	-	0	34	6	5.1	31
10-3	M	1630	520	22	420	3	4.6	0	2	0	10	8	1.7	19
10-24	Th	1200	220	16	280	8	5.2	0	7	-	20	9	4.9	49
Average			440	20	360	5	4.3 to 5.2	-	-	-	21	8	3.9	33

Date Collected	Day	Time	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform MPN/100 ml.
1955					
9-30	F	0755	0.6	2,300	2,400
10-3	M	1630	1.4	4,900	230
10-24	Th	1200	4.6	6,800	150
Average			2.2	4,700	930

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 289 - Located on Mill Creek below septic tank effluent for Town of Roseboro.																Drainage Area (sq. mi.) .56
Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
								Phenol. ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
6-30	Th	1345	-	24	220	35	7.3	0	520	46	204	0.6	7	>10#	-	9,300,000
7-7	Th	1115	-	26	170	20	7.5	0	584	51	220	0.7	9	33	-	2,300,000
7-20	W	0915	-	24	220	50	6.8	0	120	55	46	1.1	13	9.2	-	930,000
9-30	F	0715	-	20	180	15	6.0	0	21	10	20	2.3	25	6.0	-	430,000
10-3	M	1535	-	21	160	15	6.3	0	45	30	25	2.2	24	6.8	-	93,000,000
10-24	Th	1535	-	19	130	15	6.5	0	120	10	56	0.0	0	33	-	4,300,000
Average				22	180	25	6.0 to 7.5	0	235	34	95	1.2	13	17.6		18,000,000

Excluded from average - indeterminate.
Note: Flow too small to gage or rate.

Station 290 - Located on Mill Creek below septic tank effluent for Town of Roseboro and 1.7 miles below Station 289 on this stream.																Drainage Area (sq. mi.) 2.99
6-30	Th	1400	.8	24	110	20	6.4	0	9	6	5	7.5	88	1.0	5	9,300
7-7	Th	1125	.6	24	130	-	6.5	0	11	5	5	7.2	85	0.9	4	2,300
7-20	W	0930	2.5	23	200	25	5.8	0	8	40	8	6.3	72	0.8	14	4,300
9-30	F	0730	-*	21*	220*	5*	5.5*	0*	6*	8*	8*	2.8*	31*	1.1*	-*	1,500*
10-3	M	1500	-*	20*	200*	5*	5.4*	0*	6*	24*	7*	5.5*	60*	1.1*	-*	4,300*
10-24	Th	1600	1.7	17	120	8	5.8	0	12	20	9	7.7	79	1.3	15	23,000
Average			1.4	22	140	20	5.4 to 6.5	0	10	18	7	7.2	81	1.0	10	9,700

* Excluded from average because of unseasonable flood flow.

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 382

Station 291 - Located on South River below Mill Creek containing effluent from septic tank at Roseboro and for general river quality.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	
							Phenol. ppm	Total ppm	Mineral ppm	Total ppm			ppm	Sat. %
6-30	Th	1500	67	26	140	10	-	-	0	18	6	11	6.5	79
7-7	Th	1330	15	28	140	10	-	-	0	12	6	7	5.4	68
7-20	W	1110	345	26	180	25	-	-	0	15	39	6	3.8	46
9-30	F	0935	784	23	400	2	0	5	-	-	18	6	2.5	29
10-3	M	1700	672	22	400	8	0	2	0	30	14	8	2.5	28
10-24	Th	1700	317	16	240	6	0	5	-	-	22	9	6.2	63
Average			367	24	250	10	0	4	0	19	18	8	4.5	52

Date Collected	Day	Time	5 Day B.O.D.		Coliform MPN/100 ml.
			ppm	lbs/day	
6-30	Th	1500	0.8	360	4,300
7-7	Th	1310	3.1	310	360
7-20	W	1110	0.8	1,900	2,400
9-30	F	0935	0.6	3,200	930
10-3	M	1700	0.9	4,100	91
10-24	Th	1700	1.2	2,600	930
Average			1.2	2,100	1,500

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 292 - Located on South River 4.7 miles above confluence with Black River. Drainage Area (sq. mi.) 470

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Acidity Mineral ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1955																
6-30	Th	1530	88	26	160	20	4.3	0	15	7	7	6.8	83	1.0	590	1,500
7-7	Th	1345	29	29	100	15	4.5	0	11	8	7	6.4	82	0.9	180	1,500
7-20	W	1702	437	27	170	15	4.8	0	17	27	5	4.6	57	0.6	1,800	230
10-17	M	1150	355	18	280	10	4.9	0	11	10	7	6.1	64	4.0	9,600	430
10-27	Th	0930	362	15	220	5	5.1	0	11	20	6	7.0	69	1.0	2,400	230
Average			254	23	190	15	4.3 to 5.1	0	13	14	6	6.2	71	1.5	2,900	780

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) -

Station 293 - Located at end of diving pier at Williams Lake bathing area.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Acidity Mineral ppm	Acidity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %
1955														
6-20	Th	1100	-	25	210	30	5.8	0	7	-	-	4	9	2.6
7-7	Th	0910	-	28	180	10	6.0	0	7	-	-	3	8	6.2
7-19	T	1600	-	33	340	20	4.8	-	-	0	26	23	5	1.5
7-20	W	0710	-	26	320	30	5.1	-	-	0	18	36	6	1.1
8-13	Th	1550	-	26	320	6	4.9	0	20	-	-	22	10	3.3
8-24	W	1630	-	25	210	5	5.3	0	5	-	-	12	7	2.7
9-19	M	1450	-	21	440	10	5.1	0	2	-	-	6	6	6.7
10-25	T	1450	-	16	260	3	5.5	0	8	-	-	20	8	6.3
Average				25	280	15	4.8 to 6.0	0	8	-	-	16	7	3.8

Date Collected	Day	Time	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform MPN/100 mL
1955					
6-30	Th	1100	1.9	-	1,500
7-7	Th	0910	4.1	-	910
7-19	T	1600	1.8	-	150
7-20	W	0710	1.4	-	230
8-18	Th	1550	1.6	-	9,300
8-24	W	1630	2.7	-	93,000
9-19	M	1450	2.8	-	7,300
10-25	T	1450	2.8	-	230
Average			2.4	-	14,000

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 294 -- Located on Little Coharie Creek above untreated domestic sewage outfall from Salemburg.

Drainage Area (sq. mi.) 73.6

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.	
						ppm	idity ppm		ppm	Phenol. ppm	Mineral ppm	Total ppm			ppm	% Sat.
6-30	Th	1130	36	23	210	6	6	5.2	0	5	-	-	4	8	5.7	66
7-7	Th	0940	20	26	240	15	15	5.0	-	-	0	14	3	6	1.4	17
7-20	W	0742	21	26	240	60	60	4.9	-	-	0	21	18	6	3.7	45
9-19	M	1520	200*	21*	440*	15*	15*	4.6*	0*	1*	-	-	8*	6*	2.7*	30*
10-25	T	1320	26	14	360	5	5	5.2	0	7	-	-	16	8	5.4	52
Average			26	22	260	20	20	4.6 to 5.2	-	-	-	-	10	7	4.1	45

Date Col- lected	Day	Time	5 Day B.O.D.		Coliform MPN/100 ml.
			ppm 20°C	lbs/day 25°C	
6-30	Th	1130	0.6	150	930
7-7	Th	0940	1.2	160	430
7-20	W	0742	0.5	71	230
9-19	M	1520	0.7*	950*	4,300*
10-25	T	1320	1.9	330	930
Average			1.1	180	630

* Excluded from average because of unseasonable flood flow.

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 295 - Located on Little Coharie Creek below untreated domestic sewage outfall from Salemburg. Drainage Area (sq. mi.) 77.3

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Acidity Mineral ppm	Acidity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.
1955															
6-30	W	1200	38	23	230	15	4.8	-	-	0	15	4	7	5.7	66
7-7	Th	1020	18	25	240	15	5.5	-	-	0	12	4	5	4.6	55
7-20	W	0823	22	25	240	30	4.8	-	-	0	24	17	6	3.3	39
9-19	M	1540	210*	21*	520*	35*	4.6*	0*	1*	-	-	6*	5*	2.9*	32*
10-25	T	1340	27	15	360	10	4.9	0	5	-	-	18	11	5.5	54
Average			26	22	260	20	4.6 to 5.5	-	-	0	17	11	7	4.8	54

Date Collected 1955	Day	Time	5 Day B.O.D.		Coliform MPN/100 ml.
			ppm 20°C	lbs/day 25°C	
6-30	W	1200	1.0	260	910
7-7	Th	1020	1.4	170	1,500
7-20	W	0823	0.9	130	360
9-19	M	1540	2.0*	2,800*	7,300*
10-25	T	1340	2.0	360	4,300
Average			1.3	230	1,800

* Excluded from average because of unseasonable flood flow.

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 296 - Located at outlet to Laurel Lake bathing area. Drainage Area (sq. mi.) -

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
6-30	Th	1145	-	24	200	30	6.1	0	9	6	3.8	45	2.5	-	730
7-7	Th	1000	-	26	110	15	6.5	0	16	7	7.6	93	4.0	-	930
7-19	T	1640	-	31	180	60	6.3	0	10	27	6.3	84	2.4	-	730
7-20	W	0800	-	28	170	30	6.4	0	10	28	7.4	94	2.6	-	930
8-18	Th	1410	-	25	180	8	5.4	0	15	20	4.7	56	0.5	-	930
8-24	W	1535	-	26	380	1	4.3	0	0	10	5.0	61	2.0	-	230
9-19	M	1600	-	21	210	10	5.6	0	3	8	6.1	68	2.8	-	24,000
10-25	T	1400	-	17	130	5	5.8	0	12	10	8.3	86	1.8	-	2,300
Average				25	200	20	4.3 to 6.5	0	9	15	6.2	73	2.3	-	3,800

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 90.7

Station 297 - Located on Little Coharie approximately 0.5 of a mile below effluent from septic tank on east side of Roseboro.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat.	
									Phenol. ppm	Total ppm	Mineral ppm	Total ppm			ppm	% Sat.
6-30	Th	1255	46	23	210	15	4.3	-	-	0	0	21	6	8	5.9	69
7-7	Th	1040	9	26	210	7	5.7	-	-	0	0	8	5	7	5.2	63
7-20	W	0835	80	25	340	15	4.8	-	-	0	0	21	17	7	4.2	50
9-19	M	1015	255*	21*	420*	30*	4.7*	0	0	-	-	-	6*	6*	3.6*	40*
10-25	T	1415	50	15	320	6	5.5	0	0	-	-	-	20	7	5.5	54
Average			46	22	280	10	4.3 to 5.7	-	-	0	0	17	12	7	5.2	59

Date Collected	Day	Time	5 Day B.O.D.		Coliform MPN/100 ml.
			ppm 20°C	lbs/day 25°C	
6-30	Th	1255	0.7	220	730
7-7	Th	1040	1.4	85	2,400
7-20	W	0835	0.6	320	430
9-19	M	1615	2.8*	4,800*	93,000*
10-25	T	1415	0.9	300	430,000
Average			0.9	230	110,000

* Excluded from average because of unseasonable flood flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 298 - Located on Little Coharie Creek below pollution from east side of Roseboro and 1.5 miles below Station 297 on this stream. Drainage Area (sq. mi.) 96.4

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Acidity Mineral ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O ₂ % Sat.
6-30	Th	1055	50	23	200	10	4.4	-	-	0	5	7	6.0 69
7-7	Th	1100	6.4	26	210	20	6.5	0	10	-	6	7	5.2 63
7-20	W	0855	102	26	340	20	4.9	-	-	0	14	5	4.1 50
9-19	M	1630	280*	21*	400*	25*	4.6*	0	1*	-	6*	7*	3.5* 39*
10-25	T	1430	54	15	320	5	5.2	0	9	-	16	7	5.5 54
Average			53	23	260	15	4.4 to 6.5	0	-	-	10	7	5.2 59

Date Collected	Day	Time	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform MPN/100 ml.
6-30	Th	1255	1.2	410	43,000
7-7	Th	1100	1.5	65	24,000
7-20	W	0855	1.4	960	4,300
9-19	M	1630	2.8*	5,300*	21,000*
10-25	T	1430	1.3	470	9,300
Average			1.4	480	20,000

* Excluded from average because of unseasonable flood flow.

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 158

Station 299 - Located on Little Coharie 11.6 miles below Station 298 on this stream and 0.2 mile above confluence with Great Coharie Creek.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity Total		Acidity Mineral		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	
1955																
6-30	Th	1435	80	24	180	15	5.3	-	-	-	0	10	5	6	6.9	81
7-7	Th	1245	19	27	180	15	5.2	-	-	-	0	8	6	7	5.7	70
7-20	W	1015	260	26	260	10	5.1	-	-	-	0	14	21	5	4.3	52
9-19	M	1740	340	21	280	8	4.6	0	1	-	-	-	6	7	3.8	42
10-6	Th	1300	250	20	340	5	4.7	0	1	-	-	-	6	5	3.4	37
10-25	T	1535	95	15	250	3	4.9	0	3	-	-	-	18	6	7.5	74
Average			174	22	250	9	4.6 to 5.3	0	2	0	0	11	10	6	5.3	59

Date Collected	Day	Time	5 Day B.O.D.		Coliform MPN/100 ml.
			ppm 20° C	lbs/day 25° C	
1955					
6-30	Th	1435	0.5	270	930
7-7	Th	1245	0.8	100	290
7-20	W	1015	0.9	1,600	2,300
9-19	M	1740	2.1	4,800	15,000
10-6	Th	1300	3.5	5,900	4,300
10-25	T	1535	0.7	450	4,300
Average			1.4	2,200	4,500

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 300 - Located on Great Coharie Creek above domestic sewage and industrial waste from Clinton and vicinity.

Drainage Area (sq. mi.) 136

Date Col- lector 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range	Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat.	
								Phenol. ppm	Total ppm	Mineral ppm	Total ppm				
7-6	W	1010	15	25	180	10	5.8	0	5	-	-	7	6	4.4	52
7-19	T	1225	116	27	220	15	5.7	0	10	-	-	18	5	3.0	37
7-25	M	1435	57	26	260	25	4.5	-	-	0	26	10	9	3.4	41
9-25	F	1635	-*	23*	240*	6*	6.2*	0*	9*	-	-	14*	5*	2.8*	32*
10-6	Th	0810	106	21	340	8	6.1	0	8	-	-	14	6	2.2	24
Average			74	25	250	15	4.5 to 6.1	0	8	-	-	12	7	3.3	39

Date Col- lector 1955	Day	Time	5 Day B.O.D.		Coliform MPN/100 ml.
			ppm 20°C	lbs/day 25°C	
7-6	W	1010	1.8	180	2,400
7-19	T	1225	0.9	700	910
7-25	M	1435	2.3	880	24,000
9-25	F	1635	1.7*	-*	930*
10-6	Th	0810	1.3	930	4,300
Average			1.6	670	7,900

* Estimated from average because of unseasonable flood flow.

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 7.64

Station 301 - Located on Mill Creek approximately 0.5 of a mile above untreated domestic sewage and industrial waste from Clinton and Lundy Packing Co.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
						ppm	idity ppm		Phenol. ppm	Total ppm			ppm	% Sat.			
7-6-1955																	
7-6	W	1030	1.5	25	160	10	10	6.9	0	43	25	16	5.2	62	4.5	46	43,000
7-19	T	1240	2.0	30	280	100	100	6.9	0	59	25	26	1.0	13	26.4#	>360#	2,400,000
7-25	M	1455	1.1	27	160	20	20	6.8	0	27	30	12	3.6	44	4.0	30	240,000
9-23	F	1655	14*	24*	260*	15*	15*	6.0*	0*	13*	20*	12*	4.0*	47*	3.2*	300*	93,000*
10-6	Th	0830	4.7	22	260	20	20	6.0	0	12	18	7	4.8	55	2.9	92	43,000
Average			2.3	26	220	40	40	6.0 to 6.9	0	35	25	15	3.7	44	3.8	56	680,000

Excluded from average - indeterminate.

* Excluded from average because of unseasonable flow.

Station 302 - Located on Dollar Branch above untreated domestic sewage and industrial waste from Town of Clinton and Lundy Packing Co.

Drainage Area (sq. mi.) 1.86																
Station 302 - Located on Dollar Branch above untreated domestic sewage and industrial waste from Town of Clinton and Lundy Packing Co.																
7-6	W	1055	0.6	25	35	15	7.0	0	47	42	7	6.8	81	1.1	4	43,000
7-19	T	1300	0.6	28	240	180	7.1	0	36	28	11	5.2	66	1.9	8	43,000
7-25	M	1510	0.45	25	120	10	7.0	0	38	34	10	4.8	57	1.4	4	15,000
9-23	F	1710	4.8*	22*	180*	15*	6.0*	0*	9*	24*	13*	5.6*	64*	1.4*	45*	930,000
10-6	Th	0850	1.4	22	180	15	6.0	0	9	20	5	5.9	67	1.3	12	43,000
Average			0.8	25	140	55	6.0 to 7.1	0	33	31	8	5.7	68	1.4	7	36,000

* Excluded from average because of unseasonable flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 303 -- Located on Mill Creek approximately 100 feet below sewage and industrial waste outfall for Clinton and Lundy Packing Company.

Drainage Area (sq. mi.) 10.2

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day BOD ₅ ppm at 20°C	Calcium per 100 ml.
7-6	W	1130	2.4	26	140	90	6.9	0	50	6	0.6	7	>120#	24,000,000
7-12	T	1345	3.3	28	280	40	7.1	0	29	26	0.7	9	23	510
7-25	M	1555	3.4	27	360	100	7.0	0	42	28	2.4	30	96	2,200
9-23	F	1755	20*	24*	240*	15*	6.2*	0*	26*	14*	3.7*	144*	17*	2,300*
10-6	Th	0930	6.4	23	520	100	6.3	0	26	38	1.2	14	90	3,900
Average			3.9	26	320	85	6.2 to 7.1	0	37	25	1.2	15	70	2,200
														41,000,000

* Excluded from average because of unseasonable flow.

Excluded from average -- indeterminate.

Station 304 -- Located on Great Coharie Creek approximately 2.4 miles below domestic sewage and industrial waste outfall from Clinton and Lundy Packing Co. located on Mill Creek.

Drainage Area (sq. mi.) 158

7-6	W	1200	26	27	180	10	6.0	0	10	10	2.9	36	1.7	300	240,000
7-12	T	1415	255	28	220	15	6.0	0	13	4	2.3	29	1.0	1,700	3,600
7-25	M	1615	95	26	260	6	5.7	0	10	8	1.8	22	1.3	830	3,600
9-23	F	1845	1,000*	24*	280*	6*	6.3*	0*	20*	8*	1.7*	20*	1.5*	10,000*	24,000*
10-6	Th	1000	190	21	340	8	6.3	0	20	12	1.9	21	1.4	1,800	1,500
Average			142	26	250	10	5.7 to 6.3	0	13	9	2.2	27	1.4	1,200	62,000

* Excluded from average because of flood flow.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 305 - Located on Great Coharie Creek at a point 11.8 miles below Station 304 Drainage Area (sq. mi.) 207
on this stream and 0.2 of a mile above confluence with Little Coharie Creek.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	pH Range	Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	
							Phenol. ppm	Total ppm	Mineral ppm	Total ppm			ppm	Sat. ppm
7-6 1955	W	1245	43	26	160	15			0	13	8	8	5.7	70
7-19	T	-	333	Water too high to sample.										
7-25	M	1650	120	Water too high to sample.										
9-23	F	1400	-	Unable to rate flood flow.										
10-6	Th	1100	250	20	340	3		9			16	6	3.1	34

Date Collected	Day	Time	5 Day B.O.D.		Coliform
			ppm 20°C	lbs/day 25°C	
7-6 1955	W	1245	1.4	410	430
7-19	T	-			
7-25	M	1650			
9-23	F	1400			
10-6	Th	1100	1.7	2,900	430

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 306 - Located on Stewarts Creek approximately 50 feet below outfall from domestic sewage treatment plant at Warsaw. Drainage Area (sq. mi.) 1.71

Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-8	F	1045	-*	29*	-	-	6.6*	0*	33*	50*	11*	6.2*	10*	-*	2,400,000*
7-12	T	0835	-*	25*	130*	25*	6.8*	0*	68*	64*	16*	4.4*	20*	-*	9,300,000*
7-18	M	1250	0.7	27	170	60	6.8	0	94	72	20	2.1	61	290	2,400,000
10-13	Th	0805	1.1	20	170	20	6.6	0	61	48	28	2.8	18	130	2,400,000
10-26	W	1400	.6	21	180	50	7.0	0	151	93	29	3.1	78	320	4,300,000
Average			0.8	23	170	45	6.6 to 7.0	0	102	71	26	2.7	52	250	3,000,000

* Excluded from average as high flow could not be rated.

Station 307 - Located on Stewarts Creek below domestic sewage treatment plant at Warsaw and 2.3 miles below Station 306 on this stream.

Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-8	F	1345	-*	27*	420*	180*	6.0*	0	11*	21*	4*	4.3*	4.0*	-*	430,000*
7-12	T	0850	-*	23*	90*	10*	6.3*	0	24*	33*	11*	4.1*	1.3*	-*	15,000*
7-18	M	1540	1.9	27	100	25	6.5	0	25	31	14	3.8	0.7	9	73,000
10-13	Th	0820	2.9	17	160	10	6.5	0	26	26	11	4.7	1.9	37	24,000
10-26	W	1515	1.6	14	130	15	6.6	0	31	27	13	5.2	9.3	100	43,000
Average			2.1	19	130	15	6.0 to 6.6	0	27	28	13	4.6	4.0	49	47,000

* Excluded from average as high flow could not be rated.

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 1.53

Station 308 - Located on an unnamed tributary to Millers Creek approximately 100 feet below outfall from domestic sewage treatment plant for Town of Magnolia.

Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-8	F	1405	0.05	29	50	20	6.8	0	128	48	30	0.0	0	23	8	24,000,000
7-12	T	0955	.04	26	1,120	280	6.9	0	110	52	30	0.0	0	20	5	4,300,000
7-18	M	1200	.03	28	130	20	6.9	0	93	49	25	1.0	13	14	3	2,100,000
10-13	Th	0925	.05	22	180	10	6.6	0	51	42	16	1.2	14	4.0	1	240,000
10-26	W	1535	.04	19	130	25	7.0	0	94	49	26	0.7	7	15	4	93,000
Average			0.04	25	320	70	6.6 to 7.0	0	95	48	25	0.6	7	15	4	6,100,000

Station 309 - Located on Millers Creek 3.6 miles below effluent from domestic sewage treatment plant for Town of Magnolia on unnamed tributary to this stream.

Date	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-8	F	1205	2.2	27	90	10	5.8	0	7	25	4	6.0	74	2.4	36	9,300
7-12	T	1010	1.3	23	130	10	6.6	0	28	61	4	5.8	67	1.1	10	910
7-18	M	1410	.6	27	140	10	6.7	0	34	55	5	5.5	68	3.0	12	930,000
10-13	Th	0855	5.4	17	210	2	6.6	0	23	32	4	6.2	64	1.1	40	910
10-26	W	1500	3.5	14	130	10	6.8	0	28	42	10	8.1	78	1.2	28	1,500
Average			2.6	22	140	8	5.8 to 6.8	0	24	43	5	6.3	70	1.8	25	190,000

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 310 - Located on Stewarts Creek below pollution from Warsaw and Magnolia and 1.2 miles downstream from mouth of Millers Creek. Drainage Area (sq. mi.) 49.0

Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
						ppm	bid- ity ppm		ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
7-8	F	1245	42	27	500		160	6.4	0	12	18	4	6.3	78	3.5	990	93,000
7-12	T	1045	13	23	120		15	6.7	0	24	36	6	6.8	78	1.1	97	3,600
7-18	M	1140	5.8	27	100		20	6.8	0	24	33	7	6.1	75	0.8	31	2,100
10-13	Th	0840	25	17	160		5	6.7	0	21	29	6	7.2	74	0.8	140	4,300
10-26	W	1030	16	12	100		20	7.0	0	25	32	11	9.2	85	1.8	190	930
Average			20	21	200		45	6.4 to 7.0	0	21	30	7	7.1	78	1.6	290	21,000

Station 311 - Located on Black River 3.5 miles above confluence with South River.																	
Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
						ppm	bid- ity ppm		ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
7-8	F	0835	110	27	140		7	5.8	0	7	14	8	5.6	69	1.0	740	740
7-12	T	1230	210	29	160		10	6.6	0	12	12	5	6.1	78	1.2	1,700	7,300
7-18	M	1635	770	25	180		15	5.8	0	6	17	9	4.9	58	0.7	3,600	2,100
10-17	M	1405	550	19	260		10	6.0	0	8	11	8	6.6	70	2.4	8,900	730
10-27	Th	1015	380	16	200		8	6.4	0	9	19	7	8.0	80	0.8	2,100	1,500
Average			404	23	190		10	5.8 to 6.6	0	8	15	7	6.2	71	1.2	3,400	2,500

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 312 - Located on Black River 14.5 miles below Station 311 on this stream
for general river quality. Drainage Area (sq. mi.) 1,250

Date Collected	Day	Time	Mean Daily Discharge		Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	
			cfs	bid-						Phenol. ppm	Total ppm	Mineral ppm	Total ppm			ppm	Sat.
1955																	
7-8	F	0758	400		28	135	15	6.4		0	10			16	8	5.3	67
7-12	T	1350	200		29	140	15	6.5		0	10			18	7	5.8	74
7-18	M	1753	850		27	150	20	5.8		0	7			14	7	4.2	52
8-30	T	1200	6,600*		25*	320*	1*	5.1*		-*	-*	0*	15*	19*	6*	2.0*	24*
10-17	M	1500	1,200		19	260	-	5.5		-	-	0	9	10	8	4.8	51
10-27	Th	0855	650		14	220	15	5.8		0	7			12	10	6.5	64
Average			660		23	180	15	5.1 to 6.5		0	9	-	-	14	8	5.3	62

Date Collected	Day	Time	5 Day B.O.D.		Coliform
			ppm	lbs/day	
1955			20°C	25°C	MPN/100 ml.
7-8	F	0758	1.1	3,000	4,300
7-12	T	1350	1.1	1,500	600
7-18	M	1753	0.6	3,400	4,700
8-30	T	1200	1.3*	58,000*	230*
10-17	M	1500	2.4	19,000	930
10-27	Th	0855	0.7	3,100	430
Average			1.2	6,000	2,200

* Excluded from average because of flood flow caused by August Hurricanes.

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 312 - Located on Black River 14.5 miles below Station 311 on this stream
for general river quality. Drainage Area (sq. mi.) 1,250

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-16	M	1600	250	30	240	6	6.5	0	8	12	6	5.1	67	1.1	1,900 2,300

Station 313 - Located at end of pier at Singletary Lake bathing area. Drainage Area (sq. mi.)

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Mineral ppm	Acidity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-5	T	1600	-	30	70	10	4.6	0	6	15	7	6.7	88	1.0	23
7-13	W	1105	-	28	90	15	4.2	0	13	14	6	6.0	76	0.7	240
7-29	F	0645	-	30	80	6	3.9	4	19	15	7	6.5	86	1.8	-
Average				29	80	10	3.9 to 4.6	1	13	15	7	6.4	83	1.2	-

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 314 - Located on Black River within tidal water, 1.2 miles above mouth of
 Thorofare and 4.2 miles above confluence with Cape Fear River. Drainage Area (sq. mi.) 1,530

Date Collected	Day	Tide & Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Acidity Mineral ppm	Acidity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat. ppm
1956														
6-12	T	1450H	650	25	290	10	-	-	-	-	-	-	-	3.4 40
6-25	M	1405H	480	29	290	10	6.1	0	8			13	4	3.6 46
7-3	T	1125M	1,040	29	230	9	5.0	-	-	0	17	11	7	4.2 54
7-15	M	1445L	1,800	30	260	3	6.2	0	9			12	6	4.1 54
7-24	T	0835L	1,800	28	250	5	5.7	0	5			10	3	3.7 47
Average				28	260	7	5.0 to 6.2	0	7	-	-	12	5	3.8 48

Date Collected	Day	Tide & Time	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform MPN/100 ml.
1956					
6-12	T	1450H	-	-	-
6-25	M	1405H	2.5	8,100	4,800
7-3	T	1125M	1.6	11,000	3,000
7-16	M	1445L	0.8	4,300	1,400
7-24	T	0835L	1.2	15,000	3,600
Average			1.5	9,600	3,200

TABLE 23
ANALYTICAL RESULTS
MAJIN RIVER DRAINAGE AREA

Station 315 -- Located approximately 0.5 mile into the mouth of Thorofare.														
Drainage Area (sq. mi.) --														
Date Collected	Day	Time & Tide	Discharge	Temp.	Color	Turbidity	pH Range	Alkalinity	Hardness	Chloride	D. O.	% Sat.	5 Day B.O.D.	
1956			cfs	°C	ppm	ppm		ppm	as CaCO ₃	ppm	ppm		ppm	25°C
6-25	M	1305 H	--	29	210	10	6.4	0	14	18	0.8	10	2.6	--
7-3	T	1215 M	--	30	210	7	6.8	0	20	21	0.9	12	3.6	--
7-16	M	1400 L	--	31	180	20	6.9	0	29	22	3.3	44	2.9	--
7-24	T	0925 L	--	27	980	230	6.6	0	12	11	4.9	60	2.3	--
Average				29	400	65	6.4 to 6.9	0	19	18	2.5	32	2.9	

Date Collected	Day	Time & Tide	Coliform MPN/100 ml.
1956			
6-25	M	1305 H	15,000
7-3	T	1215 M	93,000
7-16	M	1400 L	4,300
7-24	T	0925 L	9,300
Average			30,000

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 1,560

Station 316 - Located on Black River within tidal water and 1.0 mile above confluence with Cape Fear River.

Date Collected	Day	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
6-12	T	1545 H	-	25	270	15	6.4	0	15	11	2.8	2.4	-
6-14	Th	1300 L	-	27	290	14	6.3	0	14	11	2.2	2.4	-
6-25	M	1225 H	-	29	170	19	6.4	0	19	11	0.1	3.0	-
7-3	T	1250 L	-	29	210	14	6.1	0	14	9	2.4	2.0	-
7-16	M	1320 L	-	30	240	24	6.6	0	24	10	2.3	1.6	-
7-24	T	0955 L	-	27	530	12	6.4	0	12	4	4.2	1.7	-
Average				28	280	16	6.1 to 6.6	0	14	9	2.3	2.2	-

Date Collected	Day	Time & Tide	Coliform MPN/100 mL
6-12	T	1545 H	440
6-14	Th	1100 L	18,000
6-25	M	1225 H	11,000
7-3	T	1250 L	14,000
7-16	M	1320 L	250
7-24	T	0955 L	4,600
Average			8,000

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 317 - Located on Cape Fear River 1.7 miles below mouth of Black River and 16 miles below effluent from industrial waste lagoon at Riegel Paper Corp. Drainage Area (sq. mi.) 7,040

Date Collected	Day	Time & Tide	Mean Daily Discharge		Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity Phenol.		Acidity Mineral		Hardness as CaCO ₃ ppm	Chloride ppm
			cfs	bid-			ity ppm	ity ppm		ppm	ppm	ppm	ppm		
6-12	T	1339 H	2,100		25	300	20		6.4	0				15	12
6-14	Th	1155 L	1,900		26	270	15		6.4	0				15	9
7-3	T	1345 L	2,900		30	210	8		6.2	0		0		16	10
7-16	M	1225 L	2,400		30	200	10		6.8	0				24	10
7-24	T	1045 H	14,000*		27*	700*	160*		6.7*	0*				15*	2*
Average			2,300		28	250	15		6.2 to 6.8	0		-		18	10

Date Collected	Day	Time & Tide	D. O.		5 Day B.O.D.		Coliform	
			ppm	% Sat.	ppm 20° C	lbs/day 25° C	MPN/100 mL	
6-12	T	1339 H	2.6	31	1.9	27,000	4,000	
6-14	Th	1155 L	1.9	23	2.1	27,000	10,000	
7-3	T	1345 L	2.3	30	2.1	41,000	5,300	
7-16	M	1225 L	2.7	36	1.5	24,000	150	
7-24	T	1045 H	4.6*	57*	1.7*	160,000*	4,300*	
Average			2.4	30	1.9	30,000	4,900	

* Excluded from average because of flood flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 318 - Located on Cape Fear River near water intake for Carolina Power & Light Company's Sutton Steam Plant and above cooling water outlet canal. Drainage Area (sq. mi.) 7,050

Date Col-lected 1956	Day	Time & Tide	Mean Daily Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
6-11	M	1420 H	2,300	26	250	15	6.6	0	17	17	10	3.0	36	2.1	33,000
7-5	Th	0810 H	2,200	29	230	15	6.5	0	15	18	10	2.1	27	1.2	18,000
7-19	Th	0820 H	2,700	30	210	15	6.7	0	22	24	12	2.6	34	2.5	46,000
7-30	M	1005 L	2,600	28	430	55	6.4	0	11	15	3	3.2	41	1.8	32,000
Average			2,450	28	280	25	6.4 to 6.7	0	16	19	9	2.7	35	1.9	32,000

Date Col-lected 1956	Day	Time & Tide	Coliform MPN/100 ml.
6-11	M	1420 H	24,000
7-5	Th	0810 H	4,300
7-19	Th	0820 H	2,300
7-30	M	1005 L	4,300
Average			8,700

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 7,060

Station 318 A - Located in mouth of cooling water outlet canal for Carolina Power & Light Company's Sutton Steam Plant.

Date Collected	Day	Time & tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity Total ppm		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %		5 Day B.O.D. lbs/day 20°C		Coliform M.P.N. per 100 ml.
6-11	M	1355	H -	33	240	15	6.6	0	17	16	11	3.1	42	2.4	-	-	2,400
7-5	Th	0755	H -	35	240	10	6.5	0	15	22	11	2.3	32	1.5	-	-	2,300
7-30	M	1015	L -	37	420	50	6.4	0	11	14	4	3.4	49	1.0	-	-	910
Average				35	300	25	6.4 to 6.6	0	14	17	9	2.9	41	1.6			1,900

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 319 - Located on Cape Fear River approximately 1.25 miles downstream from Drainage Area (sq. mi.) 7,060
cooling water outlet canal for Carolina Power & Light Co. and 0.25
of a mile below Royster Guano Co.

Date Collected 1956	Day	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Alkalinity		Sulfate ppm	Hardness as CaCO ₃ ppm	Flo-ride ppm	Phosphate ppm	Chloride ppm
							pH	Phenol. ppm					
6-11	M	1330 H	-	25	210	8	6.6	0	20	20	.3	0	22
7-5	Th	0730 H	-	29	210	7	6.5	0	17	19	-	-	12
7-19	Th	0810 H	-	30	240	25	6.8	0	20	27	.3	0	30
7-30	M	1035 L	-	28	360	45	6.4	0	23	15	.12	0	4
Average				28	260	20	6.4 to 6.8	0	20	20	0.2	0	17

Date Collected 1956	Day	Time & Tide	D. O. %	5 Day B.O.D.		Coliform MPN/100 ml.
			ppm	20°C	25°C	
6-11	M	1330 H	2.9	35	-	2,400
7-5	Th	0730 H	1.9	25	-	4,600
7-19	Th	0810 H	2.8	37	-	360
7-30	M	1035 L	3.1	39	-	920
Average			2.7	34	2.1	2,100

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 320 - Located on Cape Fear River approximately 0.25 of a mile upstream from Mile Board #4, below industrial waste outfalls of Navassa and between mouths of Brunswick River (upstream) and Toomers Creek (downstream). Drainage Area (sq. mi.) 7,060

Date Collected	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-9	T 1645 L	-	30*	-	-	5.7*	0*	8*	300*	430*	3.3*	43*	0.8*	-	4,300*
8-22	M 1415 H	-	29	680	110	6.3	0	12	30	0	2.5	32	2.1	-	430
8-24	W 1620 H	-	25	520	50	6.2	0	13	24	3	2.6	31	1.6	-	10,900
8-25	Th 1523 H	-	26	420	50	6.1	0	14	26	3	2.5	30	1.2	-	2,500
8-26	F 1230 L	-	25	440	55	6.1	0	13	17	3	2.3	27	1.8	-	1,100
Average			26	520	65	5.7 to 6.3	0	13	24	2	2.5	30	1.7		3,700

* Excluded from average as this was only sample collected prior to August Hurricane season.

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 7,060

Station 320 - Located on Cape Fear River approximately 0.25 of a mile upstream from Mile Board #4, below industrial waste outfalls at Navassa and between mouths of Brunswick River (upstream) and Toomers Creek (downstream).

Date Collected	Day	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Flocculants ppm	Phosphate ppm	Chloride ppm	Dissolved O ₂ ppm	% Sat.
						ppm	ppm		Phenol. ppm	Total ppm						
6-11	M	1255 H	..	26	240	20	0	6.6	20	68	5	0	150	3.3	40	
7-10	T	1115 H	-	29	260	30	0	6.6	16	31	2	0	64	3.6	46	
7-19	Th	0800 H	-	30	260	15	0	6.8	21	220	3	0	500	2.8	37	
7-19	Th	1425 L	-	30	240	10	0	6.7	21	20	1#	0	13	2.6	34	
7-30	M	1105 L	-	29	360	40	0	6.4	11	15	1	0	4	2.7	35	
8-16	Th	1110 L	-	31	210	10	0	6.5	12	21	1	0	22	2.9	39	
Average				29	260	20	0	6.4 to 6.8	17	63	0.2	0	130	3.0	39	

Date Collected	Day	Time & Tide	5 Day B.O.D. lbs/day	ppm 20°C	Coliform MPN/100 ml.
6-11	M	1255 H	-	5.1	9,300
7-10	T	1115 H	-	1.1	9,300
7-19	Th	0800 H	-	2.2	2,300
7-19	Th	1425 L	-	1.4	9,300
7-30	M	1105 L	-	1.0	910
8-16	Th	1110 L	-	2.3	4,300
Average				2.2	5,900

Excluded from average - indeterminate.

TABIE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 320-1 - Located on Cape Fear River at Mile Board #3 and 2.5 miles above confluence with Northeast Cape Fear River. Drainage Area (sq. mi.) -

Date Collected	Day	Time & Tide	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity		Sulfate ppm	Hardness as CaCO ₃ ppm	Fluoride ppm	Phosphate ppm	Chloride ppm
									Phenol. ppm	Total ppm					
7-19	Th	0748 H		30	200	10	7.0		0		70	290	0.5	0	740
7-19	Th	1415 L		30	260	30	6.7		0		20	19	0.24	0	17

Date Collected	Day	Time & Tide	D. O. %		5 Day B.O.D.		Coliform MPN/100 ml.
			ppm	Sat.	20°C	25°C	
7-19	Th	0748 H	3.0	39	2.4		4,300
7-19	Th	1415 L	2.8	37	1.4		4,300

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 321 - Located on Cape Fear River at Mile Board #1, 0.5 of a mile above
confluence with Northeast Cape Fear River and above pollution from
Wilmington. Drainage Area (sq. mi.) 7,060

Date Collected 1955	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C
8-9	T 1630 M	-	30*	-	-	6.6*	0*	22*	370*	1,100*	3.2*	42*	0.7*	-
8-22	M 1355 H	-	29	720	100	6.4	0	12	36	1	2.7	35	0.6	-
8-24	W 1547 H	-	25	620	70	6.2	0	13	28	6	2.1	25	1.7	-
8-25	Th 1502 H	-	25	380	50	6.1	0	12	23	3	3.0	36	1.2	-
8-26	F 1206 L	-	25	440	50	6.1	0	12	15	4	2.4	29	1.8	-
8-30	T 0915 H	-	26	360	15	5.7	0	8	26	12	1.4	17	2.0	-
Average		-	26	500	55	5.7 to 6.6	0	11	26	5	2.3	28	1.5	-

Date Collected 1955	Time & Tide	Coliform M.P.N. per 100 ml.	Fluoride ppm	Phosphate ppm	Sulfate ppm
8-9	T 1630 M	4,300*	<0.1*	0	140*
8-22	M 1355 H	930	0.2	0	40
8-24	W 1547 H	6,500	<0.1	0	50
8-25	Th 1502 H	3,500	<0.1	0	30
8-26	F 1206 L	2,500	<0.1	0	40
8-30	T 0915 H	360	0.1	0	-
Average		2,800	<0.1	0	40

*Excluded from average as this was only sample collected before hurricane season.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station No. 321 - Located on Cape Fear River at Mile Board #1, 0.5 of a mile above confluence with Northeast Cape Fear River and above pollution from Wilmington

Drainage Area (sq. mi.) 7,060

Date Collected	Day	Time	Discharge cfs	Temp. °C	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride		Dissolved Oxygen %	5 Day B.O.D.		Coliform M.P.N.	Flo-ride	Sulfate	Phosphate
					ppm	bid-ity ppm		ppm	ppm		ppm	ppm		ppm	lbs/day 20°C				
7-10	T	1220	H	29	440	70	6.6	0	26	14	1,020	3.7	48	3.8	-	43,000	.7	90	0
7-11	W	0725	L	29	240	20	6.6	0	17	27	27	2.9	37	1.6	-	7,500	.6	<10	0
7-11	W	1110	H	29	-	-	-	-	-	-	-	3.5	45	-	-	-	-	-	-
7-17	T	1035	L	31	240	15	6.9	0	19	80	200	2.9	39	2.3	-	2,300	.3	10	0
7-17	T	1550	H	30	-	-	-	-	-	-	1,200	3.5	47	-	-	-	-	-	-
7-19	Th	0743	H	29	240	25	6.6	0	27	700	2,300	3.1	41	1.4	-	15,000	.4	210	0
7-19	Th	1410	L	30	220	30	6.7	0	20	100	200	2.9	38	1.5	-	1,500	<.1	10	0
7-23	W	1225	H	30	210	25	7.0	0	22	17	13	4.0	53	2.8	-	24,000	.4	10	0
7-27	F	0930	M	28	420	70	6.6	0	13	16	5	3.4	43	2.4	-	4,300	.1	10	0
7-30	M	1210	M	29	320	40	6.5	0	12	23	20	3.2	41	1.9	-	43,000	.1	20	0
8-9	Th	1140	H	30	180	55	6.9	0	22	600	840	3.0	40	1.5	-	43,000	1.0	100	-
8-10	F	0635	L	29	42	15	6.6	0	15	68	140	2.6	33	1.0	-	75,000	-	-	-
8-13	M	1346	M	30	260	20	6.8	0	21	240	620	3.2	42	2.3	-	7,500	-	-	-
8-14	T	0942	L	31	240	20	6.6	0	14	120	200	3.1	41	2.2	-	9,300	-	-	-
8-15	W	0816	M	30	210	15	6.7	0	18	204	400	3.4	45	3.0	-	9,300	-	-	-
8-16	Th	0746	H	29	180	10	6.7	0	21	500	1,100	3.6	46	2.0	-	9,300	.2	120	0
8-17	F	0640	H	29	170	15	7.0	0	26	620	1,400	3.6	47	2.5	-	43,000	-	-	-
Average				30	240	30	6.5 to 7.0	0	20	222	610	3.3	43	2.1	-	22,000	0.4	60	0

Station No. 321-1 - Located on Cape Fear River at U. S. Hwy. 17 Bridge 0.3 of a mile above confluence with Northeast Cape Fear River.

Drainage Area (sq. mi.)

7-19	Th	0740	H	29	2,400	3.1	41	-	-
7-19	Th	1405	L	30	200	2.8	37	-	-

MAIN RIVER DRAINAGE AREA

Station No. 322 - Located on Northeast Cape Fear River above effluent from old domestic sewage treatment plant for Town of Mt. Olive and above untreated industrial waste from Mt. Olive Pickle Company. Drainage Area (sq. mi.) 2.75

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity		pH	Alkalinity		Acidity		Hardness as CaCO ₃ ppm	Chloride ppm	D.O. %	5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.
						bid-ity	ppm	Range	Phenol. ppm	Total ppm	Mineral ppm	Total ppm					
1955																	
8-5	F	0735	0.05	24	160	20	6.8		0	34			61	14	0.9	11	4.1
8-30	T	1305	4.2	24	55	6	5.4		0	2		12	39	12	6.7	79	0.7
10-5	W	0905	1.9	19	70	8	6.0		0	10			26	11	7.0	74	0.5
10-10	M	1350	.9	18	100	10	5.9		0	10			32	11	7.2	76	2.7
10-18	T	1520	.6	16	60	15	5.8		0	5			12	13	7.8	78	1.1
10-20	Th	1605	.5	16	65	5	6.7		0	21			28	15	8.1	81	1.6
Avera			1.4	20	85	10	5.4 to 6.8		0	14			33	13	6.3	67	1.8

Station No. 322

8-22 W 1700 2 22 70 8 6.3 0 9 32 13 6.7 76 0.7 9 9,300

Station No. 323 - Located on Barlow Branch 0.7 of a mile below untreated industrial waste from Mt. Olive Pickle Company. Drainage Area (sq. mi.) 0.70

Waste from Mr. Olive Rice Company.																		
8-5	T	0825	1.0	24	540	200	4.8	0	67	0	88	82	3,200	0.0	0	260	1,800	43,000
8-30	T	1405	2.4	26	460	130	4.3	0	0	0	84	75	2,000	0.7	9	630	10,000	240,000
10-5	W	1055	1.2	22	180	8	4.3	0	0	-	-	108	1,800	0.7	8	340	2,800	93,000
10-10	M	1405	1.2	21	200	45	4.4	0	10	0	205	52	140	0.0	0	480	3,900	930,000
10-18	T	1535	.8	20	140	30	4.3	0	0	0	230	111	2,200	1.8	20	570	3,100	430,000
10-20	Th	1705	.8	16	210	60	4.3	0	0	0	600	50	6,300	1.3	13	1,600	8,600 #	430,000
Avera.			1.2	22	280	80	4.3 to 4.8	0	13	0	241	80	2,600	0.8	8	460	4,300	360,000

Excluded from average - indeterminate.

Station No. 323

8-22 W 1720 0.5 23 360 50 4.0 40 155 130 3,800 1.9 23 1,300 4,400 230,000

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station No. 324 -- Located on Northeast Cape Fear River 1.6 miles below effluent from old domestic sewage treatment plant for Town of Mt. Olive and 2.3 miles below industrial waste outfall from Mt. Olive Pickle Company. Drainage Area (sq. mi.) 10.5

Date Collected 1955	Day	Time	Discharge cfs	Temp. °C	Turbidity		Color ppm	Alkalinity		Acidity		Hardness		D. O. ppm	5 Day B.O.D. ppm	Coliform M.P.N. per 100 ml.
					idity ppm	bid-ity ppm		Phenol. ppm	Total ppm	Mineral ppm	Total ppm	as CaCO ₃ ppm	Chloride ppm			
8-5	F	0755	1.3	24	100	20	4.5	0	20	0	278	25	1,400	0.0	0	>120#
8-30	T	1315	9*	--	--	--	--	--	--	--	--	--	--	--	--	--
10-5	W	0930	6.0	20	180	10	4.8	0	20	--	--	50	420	0.0	0	91
10-10	M	1420	4.4	19	160	10	6.9	0	25	--	--	32	59	1.5	16	8.8
10-18	T	1625	4.3	16	200	15	5.6	--	--	0	210	37	380	0.0	0	95
10-20	Th	1620	3.6	16	130	15	5.2	0	52	0	188	54	1,200	0.0	0	290
Average			3.9	19	150	15	4.5 to 6.9	0	29	0	225	.40	690	0.3	3	120

*Excluded from average - indeterminate.

Station No. 324																
8-22	F	W	1915	10	23	140	15	6.5	0	21	32	190	1.3	15	4.0	270
Station No. 325 -- Located on Northeast Cape Fear River below pollution from Town of Mt. Olive and Mt. Olive Pickle Co. and 4.1 miles below Station 324 on this stream. Drainage Area (sq. mi.) 30.5																

8-5	F	0825	7.0	25	420	60	6.6	0	26	41	160	0.0	0	9.8	460	300,000
8-30	T	1425	85	25	320	6	5.5	0	6	22	42	2.5	30	3.5	2,000	15,000
10-5	W	1030	50	20	340	3	5.6	0	10	43	37	2.4	26	1.9	640	4,300
10-10	M	1440	58	19	360	2	5.8	0	9	28	34	2.8	30	1.9	740	1,500
10-18	T	1605	40	15	280	8	6.5	0	24	37	52	4.8	47	8.2	2,200	4,300
10-20	Th	1635	37	15	240	5	6.5	0	15	15	44	4.9	49	2.3	570	7,300
Average			46	20	320	15	5.5 to 6.6	0	15	31	62	2.9	30	4.6	1,100	55,000

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 325 - Located on Northeast Cape Fear River below pollution from Town of
Mt. Olive and Mt. Olive Pickle Co. and 4.1 miles below Station 324
on this stream. Drainage Area (sq. mi.) 30.5

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH	Alkalinity		Acidity		Hardness Total as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm lbs/day		Coliform M.P.N. per 100 ml.	
								Phenl. ppm	Total ppm	Mineral ppm	Total ppm				Sat. 20°C	25°C		
8-22-56	W	1845	59	23	160	3	5.3	0	6	0	10	18	57	4.4	51	1.5	600	39,000
Station 325 A - Located on Northeast Cape Fear River near outfall below Station 325.																		
8-22-56	W	1810	100	23	220	3	5.4	0	5	0	10	20	17	4.9	56	1.3	880	23,000
Station 326 - Located on Northeast Cape Fear 2.6 miles above mouth of Goshen Swamp.																		
7-14-55	Th	1500	285	24	260	15	5.4			0	27	24	17	3.3	39	0.9	1,700	7,300
9-27-55	T	0930	345*	20*	440*	3*	5.2*			0*	18*	24*	10*	1.9*	21*	2.5*	5,800*	4,300*
10-11-55	T	1015	145	17	360	6	5.4			0	14	19	20	3.4	35	1.6	1,600	1,100
10-24-55	M	1305	82	19	280	5	5.7	0	9			18	18	5.0	53	1.6	890	2,400
11-2-55	W	0835	75	10	320	3	5.8	0	7			15	24	6.3	56	1.0	510	4,300
Average		147	18	18	300	7	5.2 to 5.8	-	-	-	-	19	20	4.5	46	1.3	1,200	3,800

* Excluded from average because of exceptional high unseasonable flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 327 -- Located on Goshen Swamp above Reedy Branch which contains effluent from domestic sewage and industrial waste treatment plant for Town of Faison and Cates Pickle Co. Drainage Area (sq. mi.) 59.2

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20° C 25° C	Coliform M.P.N. per 100 ml.	
7-14	Th	1240	--	27*	180*	30*	5.7*	0*	6*	15*	16*	3.8*	1.0*	--	21,000*
9-27	T	0833	95*	20*	280*	8*	5.9*	0*	10*	17*	22*	2.1*	2.2*	1,400*	2,400*
10-11	T	0850	30	15	320	10	6.2	0	14	22	44	3.5	1.4	280	2,100
10-24	M	1420	15	19	240	10	6.1	0	14	20	64	5.0	2.7	270	93,000
11-2	W	1005	18	11	260	10	6.2	0	14	23	37	5.7	1.5	180	7,300
Average			21	15	280	10	5.7 to 6.2	0	14	22	48	4.7	1.9	240	34,000

* Excluded from average because of exceptional high unseasonable flow.

Station 328 -- Located on Reedy Branch above effluent from sewage and industrial waste plant for Faison and Cates Pickle Co.

7-14	Th	1305	0.9	25	80	20	5.7	0	6	26	15	6.3	75	1.1	7	4,300
9-27	T	0710	3.9	20	230	20	6.0	0	10	16	9	6.2	67	1.7	45	15,000
10-11	T	0910	1.8	16	200	20	6.3	0	13	21	11	7.5	75	1.7	21	2,400
10-24	M	1730	1.1	20	180	20	6.2	0	11	16	9	7.2	78	1.6	12	2,400
11-2	W	1130	.7	12	170	15	6.2	0	10	23	8	8.6	80	1.5	7	4,300
Average			1.7	19	170	20	5.7 to 6.3	0	10	20	10	7.2	75	1.5	18	5,700

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 65.5

Station 329 - Located on Goshen Swamp 1.3 miles below mouth of Reedy Branch which contains effluent from sewage and industrial waste plant for Faison and Cates Pickle Co.

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-14	Th	1325	-*	25*	160*	15*	5.6*	0*	7*	25*	4.3*	0.8*	910*
9-27	T	0730	102*	20*	400*	15*	5.9*	0*	10*	17*	3.1*	2.0*	9,300*
10-11	T	0925	35	16	320	10	6.2	0	14	28	4.0	1.5	24,000
10-24	M	1720	17	20	240	8	6.2	0	14	49	5.5	1.9	4,300
11-2	W	1140	19	11	280	10	6.3	0	15	37	6.3	1.9	9,300
Average			24	16	280	9	5.6 to 6.3	0	14	38	5.3	1.8	13,000

* Excluded from average because of exceptional high unseasonable flow.

Station 330 -- Located on Goshen Swamp 15.1 miles below Station #329 on this stream and 1.1 miles above confluence with Northeast Cape Fear River.

Date	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-14	Th	1515	170	24	210	10	5.6	0	7	21	3.5	0.9	7,300
9-27	T	1000	470*	20*	320*	5*	6.0*	0*	10*	10*	2.7*	1.3*	4,300*
10-11	T	1245	120	18	240	3	6.2	0	13	16	2.8	1.2	2,400
10-24	M	1630	40	20	210	5	5.7	0	8	16	3.8	1.3	9,300
11-2	W	0845	54	10	240	6	5.7	0	8	18	4.4	1.5	1,500
Average			96	18	230	6	5.6 to 6.2	0	9	17	3.6	1.2	5,100

* Excluded from average because of exceptional high unseasonable flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 332 - Located on Northeast Cape Fear River at U.S.G.S. recorder for general river quality. Drainage Area (sq. mi.) 589

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm lbs/day 20°C	25°C 25°C	Coliform M.P.N. per 100 ml.
7-14	Th	1605	628	25	180	15	5.8	0	9	24	14	5.5	65	1.3	5,500	15,000
9-27	T	1030	3,850*	22*	400*	3*	5.7*	0*	9*	17*	6*	2.6*	30*	1.8*	47,000*	2,400*
10-18	T	1600	342	16	240	30	6.6	0	16	25	12	7.1	71	2.2	5,100	7,300
11-2	W	0816	374	11	240	6	6.5	0	14	30	12	8.5	77	1.2	3,000	24,000
11-8	T	0915	302	11	90	10	6.5	0	12	23	15	9.3	84	1.0	2,000	2,400
Average			412	16	190	15	5.7 to 6.6	0	13	26	13	7.6	74	1.4	3,900	12,000

* Excluded from average because of exceptional high unseasonable flow.

Station 331

7-12-56	Th	0735	117	25	170	3	6.8	0	15	29	19	6.4	76	2.5	2,000	2,300
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Station 332 - Located on an unnamed tributary to Island Creek 150' below outfall from sewage treatment plant for Town of Rose Hill. Drainage Area (sq. mi.) 0.28

7-14	Th	1730	-	28*	320*	120*	6.9*	0*	208*	110*	42*	0.0*	0*	73*	-*	24,000,000*
9-29	Th	0700	-	22*	90*	6*	6.5*	0*	51*	54*	19*	1.0*	1*	8.4*	-*	9,300*
10-13	Th	0950	.2	24	160	20	7.1	0	138	77	24	0.0	0	29	39	2,400,000
11-2	W	1330	.2	21	240	35	7.0	0	194	106	35	0.0	0	49	66	2,400,000
11-8	T	0800	.2	21	210	5	6.9	0	204	113	32	0.0	0	48	65	9,300,000
Average			0.2	22	200	20	6.5 to 7.1	0	179	99	30	0.0	0	42	57	4,700,000

* Excluded from average because unseasonable high flow could not be defined.

MAIN RIVER DRAINAGE AREA

Station 332-A - Located on unnamed tributary to Island Creek 1.5 miles below effluent from sewage treatment plant for Town of Rose Hill.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
1955 9-29	Th	0730	--*	21*	240*	6*	6.3*	0*	38*	16*	3.1*	34*	1.5*	--*	15,000*
10-13	Th	1010	0.5	17	180	10	6.7	0	46	16	5.1	53	1.6	5	9,300
11-2	W	1345	0.5	16	160	8	6.9	0	48	11	6.0	60	1.3	4	360
11-8	T	0820	0.5	11	160	10	6.6	0	56	17	5.3	48	1.3	4	930
Average			0.5	15	170	9	6.3 to 6.9	0	50	15	5.5	54	1.4	4	3,500

Drainage Area (sq. mi.) 17.5

Station 333 -- Located on Island Creek 3.1 miles below unnamed tributary containing effluent from sewage treatment plant for Town of Rose Hill.

Sample	Th	1630	1.3	29	140	20	6.5	0	34	46	11	3.5	45	1.3	11	4,300
7-14	Th	1630	1.3	29	140	20	6.5	0	34	46	11	3.5	45	1.3	11	4,300
9-29	Th	1030	1.8	22	300	2	6.4	0	25	33	17	4.0	45	0.9	110	9,300
10-13	Th	1055	5.7	18	180	5	6.9	0	41	51	16	6.2	65	0.8	31	4,300
11-2	W	1415	9.3	15	160	5	6.8	0	27	47	26	8.2	80	1.5	94	9,300
11-8	T	0835	5.6	11	170	10	6.9	0	40	60	19	8.4	76	0.7	26	930
Average			8.0	19	190	8	6.4 to 6.9	0	33	47	18	6.1	62	1.0	54	5,600

Station 333

$\frac{t}{\text{min}}$	T , °C	P , mm Hg	V_0 , ml	dV/dt , ml/min	$t/V_0 \times 10^3$, min/ml
7-12-56 Th	0805	1.3	24	120	6
				6.5	0
				54	63
				20	1.0
				12	4.4
				39	2,300

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 334 - Located on Rock Fish Creek above all pollution from Wallace. Drainage Area (sq. mi.) 122

Date	Collected	Discharge	Temp.	Color	Turbidity	pH	Alkalinity	Acidity	Hardness	Chloride	D.O.	5 Day B.O.D.	Coliform
	Day	cfs	°C	ppm	ppm	Range	Phenol.	Mineral	as CaCO ₃	ppm	%	ppm lbs/day	M.P.N.
1955							ppm	ppm	ppm	ppm	Sat.	20°C	/100ml
7-14	Th	14	26	100	15	6.4	0	10	22	5	5.6	0.5	47
9-29	Th	150	22	360	2	5.4		0	13	7	3.9	1.2	1,200
10-18	T	33	14	230	8	6.5	0	16	26	7	7.6	1.5	330
10-28	F	20	13	210	15	6.5	0	16	27	7	7.9	1.8	240
10-31	M	33	15	230	20	6.6	0	16	30	8	6.9	6.0	93,000
Average		50	18	230	10	5.4 to 6.6	0	15	25	7	6.4	2.2	620

Station 334

7-12-56	Th	0845	4.4	24	160	10	6.9	0	20	29	7	3.9	46	1.7	50	930
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Station 335 - Located on an unnamed tributary to Rock Fish Creek below industrial waste from Bonds Abattoir. Drainage Area (sq. mi.) 1.07

Date	Collected	Day	Time	Discharge	Temp.	Color	Turbidity	pH	Alkalinity	Hardness	Chloride	D. O.	5 Day B.O.D.	Coliform		
				cfs	°C	ppm	ppm	Range	Phenol.	as CaCO ₃	ppm	ppm	ppm lbs/day	M.P.N.		
1955									ppm	ppm	ppm	% Sat.	20°C	per 100 ml.		
7-14	Th		1805	0.03	27	1,120	35	6.9	0	202	138	0.0	200	41	430,000	
9-29	Th		0800	1.26	22	280	8	6.6	0	22	13	6.5	1.0	850	93,000	
10-18	T		1805	.27	15	500	40	6.7	0	44	20	6.8	24	44	430,000	
10-28	F		0840	.06	14	400	65	6.6	0	56	19	5.4	21	9	430,000	
10-31	M		1415	.48	16	360	35	6.3	0	36	11	7.6	16	52	43,000	
Average				0.42	19	540	35	6.3 to 6.9	0	72	40	5.3	52	200	290,000	
Station 335																
7-12-56	Th		0945	0.01	24	920	65	7.0	0	216	36	0.0	0	>3000	>20	430,000

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 125

Station 336 - Located on Rock Fish Creek below unnamed tributary containing industrial waste from Bonds Abattoir and above effluent from SW sewage treatment plant for Wallace.

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B. O. D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
9-29-55	Th	0910	150	22	360	3	6.0	0	12	23	5	4.0	45	1.1	1,100	150,000
10-18-55	T	1820	38	14	240	35	6.5	0	17	23	8	7.3	70	1.2	310	9,100
10-28-55	F	0850	22	14	220	15	6.7	0	17	24	8	7.7	74	1.1	160	9,300
10-31-55	M	1350	50	16	230	15	6.3	0	12	29	10	6.5	65	2.2	740	43,000
Average			65	17	260	15	6.0 to 6.7	0	15	25	8	6.4	64	1.4	580	53,000

Station 336

7-1-56	Su	1630	42	24			6.6	0	13	-	2	5.6	66	-	-	-
7-12-56	Th	1015	4.5	25	160	10	6.8	0	25	34	6	4.5	54	1.5	46	4,300

Station 337-A - Located on Little Rock Fish Creek at Boney Mill Pond.

7-1-56	Su	1645	0.6	27			6.3	0	8	-	7	4.6	57	-	-	-
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Drainage Area (sq. mi.) 9.5

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 337 - Located on Rock Fish Creek below effluent from SW sewage treatment plant for Wallace.

Drainage Area (sq. mi.) 152

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
9-29-55	Th	0930	200	22	340	3	6.0	0	15	22	7	3.0	34	1.0	1,400	24,000
10-18-55	T	1850	44	14	240	25	6.6	0	20	31	8	6.9	66	1.4	420	43,000
10-28-55	F	0955	24	14	200	10	6.6	0	19	29	11	7.0	67	1.6	260	43,000
10-31-55	M	1255	145	16	260	25	5.8	0	7	27	10	6.5	65	4.0	3,900	150,000
Average			103	17	260	15	5.8 to 6.6	0	15	27	9	5.9	58	2.0	1,500	65,000
Station 337																
7-1-56	Su	1600	59	25	130	5	6.8	0	13	48	4	5.7	68	1.9	120	910
7-12-56	Th	1315	9	26	140	15	7.0	0	40	27	8	6.2	76	1.8	190	93,000
7-20-56	F	0750	16	25	210	6	7.0	0	18	32	4	5.1	61	2.4	470	43,000
7-31-56	T	1640	29	25	160	9	6.4 to 7.0	0	20	36	6	5.7	68	2.0	260	46,000
Average			28	25	160	9	6.4 to 7.0	0	23	36	6	5.7	68	2.0	260	46,000

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 338 - Located on Little Rock Fish Creek above pollution from NE sewage treatment plant for Wallace, J. P. Stevens Textile Mill and Wallace Pickle Co.

Drainage Area (sq. mi.) 9.53

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Acidity Min. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
9-29-55	Th	1100	4	22	280	3	5.4	0	12	0	13	5	4.0	45	0.9	24	2,400
10-18-55	T	1830	7	15	270	15	6.0	0	9		17	10	4.9	48	1.0	5	1,500
10-28-55	F	0915	5	14	250	10	6.0	0	7		20	13	5.6	54	1.3	4	1,500
10-31-55	M	1335	1.3	14	260	6	5.8	0	8		19	13	4.0	38	1.4	12	2,400
Average			1.6	16	260	9	5.4 to 6.0	0	8	--	17	10	4.6	46	1.2	11	2,000

Station 338

7-1-56	Su	1030	0.6	23	--	--	6.1	0	23		--	7	0.0	0	--	--	>1,100,000#
7-12-56	Th	1045	.25	24	320	15	6.1	0	17		16	9	0.0	0	6.5	11	15,000
7-20-56	F	0610	4	24	440	30	6.4	0	21		17	8	0.0	0	3.6	97	7,500
7-31-56	T	1450	.3	31	180	8	6.0	0	10		15	8	1.7	23	3.9	8	--
Average			1.3	26	320	20	6.0 to 6.4	0	18		16	8	0.4	6	4.7	39	--

Excluded from average - indeterminate.

Station 338A - Located on Wallace Pickle Company property at industrial waste ditch, tributary to Little Rock Fish Creek.

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	Suspended	Solids (ppm)	pH Range	Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% ride	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-31	T	1420	--	31	220	40	67	3,555	5.6	0	109	166	900	4.2	57	>190	93,000

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 339 - Located on Little Rock Fish Creek below pollution from NE sewage treatment plant for Wallace, J. P. Stevens Textile Mill and Wallace Pickle Co.

Drainage Area (sq. mi.) 11.2

Date Collected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
9-29-55	Th	0945	5	22	260	5	6.0	0	12	22	17	1.3	15	2.5	84	24,000
10-18-55	T	1640	.8	15	300	15	6.9	0	66	50	53	0.6	6	34	180	2,400,000
10-28-55	F	0935	.6	16	230	25	7.0	0	74	56	41	0.2	2	48	190	430,000
10-31-55	M	1300	1.6	15	210	10	6.3	0	28	47	80	2.6	25	3.2	35	240,000
Average			2.0	17	250	15	6.0 to 7.0	0	45	44	48	1.2	12	22	120	770,000
Station 339																
7-1-56	Su	1055	0.75	24	-	-	7.1	0	64	-	73	0.9	10	6.8	34	-
7-12-56	Th	1215	.3	26	260	50	7.0	0	80	75	58	0.5	6	53	110	930,000
7-20-56	F	0710	5	25	180	15	7.0	0	75	56	65	0.0	0	32	1,100	4,300,000
7-31-56	T	1615	.35	24	140	3	6.9	0	42	46	29	2.5	29	3.5	8	430,000
Average			1.6	25	190	25	6.9 to 7.1	0	65	59	56	1.0	11	24	310	1,900,000

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 340 -- Located on Rock Fish Creek below all sources of pollution at Wallace and vicinity. Drainage Area (sq. mi.) 165

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	5 Day BOD ₅ ppm	BOD ₅ lbs/day per 100 ml.	M.P.N.
9-29-55	Th	1150	210	23	340	2	6.1	0	13	7	8	2.4	1.7	2,400	24,000
10-18-55	T	1630	45	15	240	15	6.7	0	22	29	11	6.9	1.0	300	30,000
10-28-55	F	0920	25	14	200	10	6.8	0	26	35	10	6.3	4.2	710	43,000
10-31-55	M	1305	147	16	270	30	6.5	0	13	24	10	6.5	2.7	2,700	43,000
Average			107	17	260	15	6.1 to 6.8	0	19	24	10	5.5	2.4	1,500	35,000

Station 340															
7-1-56	Su	1125	60	25	130	15	7.0	0	20	50	11	5.6	5.1	310	4,300
7-12-56	Th	1250	9	26	160	15	7.0	0	44	26	26	5.7	2.6	370	93,000
7-20-56	F	0730	21	25	180	3	6.7	0	19	36	8	4.5	1.6	310	75,000
7-31-56	T	1550	29	25	180	3	6.8	0	22	37	15	5.7	3.1	330	57,000
Average			30	25	160	10	6.7 to 7.0	0	26	37	15	5.4	3.1	330	57,000

Station 340A -- Located on Rock Fish Creek at confluence with Northeast Cape Fear River.															
Drainage Area (sq. mi.) 169															
7-1-56	Su	1505	60	27	90	3	7.2	0	40	41	11	4.5	5.6	210	2,300
7-12-56	Th	1135	9.2	27	140	8	6.5	0	34	28	11	8.0	3.4	360	23,000
7-20-56	F	0640	22	25	180	3	6.8	0	23	32	7	3.6	2.4	530	93,000
7-31-56	M	1510	30	26	180	3	6.8	0	22	32	8	5.5	2.6	530	93,000
Average			30	26	140	5	6.5 to 7.2	0	30	34	9	5.4	2.8	370	39,000

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 341 - Located on Northeast Cape Fear River at upstream limit of commercial fishing and in tidal water. Drainage Area (sq. mi.) 920

Date Collected	Day	Time & Tide	Mean Daily		Color ppm	Turbidity pfm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
			Discharge cfs	Temp. °C				Phenol ppm	Total ppm			ppm	% Sat.	ppm 20° C	lbs/day 25° C	
7-28-55	Th	1300M	450	30	240	10	6.7	0	15	30	12	4.1	54	1.3	4,000	~
8-5-55	F	0710H	450	28	320	40	6.4	0	16	36	10	4.5	57	0.6	1,800	930
8-18-55	Th	1115L	6,000	25	280	6	5.6	0	8	30	5	3.0	36	2.4	97,000	4,300
9-14-55	W	1100M	3,300	23	340	3	5.8	0	9	32	12	2.5	29	1.3	29,000	430
9-27-55	T	1500M	6,000	24	320	2	5.7	0	7	17	3	1.8	21	2.3	93,000	2,400
10-17-55	M	1700H	500	18	260	5	6.6	0	14	27	13	5.8	61	2.6	8,800	230
Average			2,800	25	300	10	5.6 to 6.7	0	12	29	9	3.6	43	1.8	39,000	1,700

Station 341																
7-12-56	Th	1445L	110	29	180	3	6.7	0	18	31	15	4.6	59	4.4	3,300	930

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 342 - Located on Burgaw Creek above effluent from Sewage Treatment Plant for Town of Burgaw. Drainage Area (sq. mi.) 1.92

Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range		Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %		5 Day B.O.D. ppm		M.P.N. per 100 ml.
7-28	Th	1230	0	No water to sample	"	"	"	"	"	"	"	"	"	"	"	"
8-5	F	0810	0	"	"	"	"	"	"	"	"	"	"	"	"	"
8-18	Th	1045	34*	26*	170*	20*	5.7*	0*	6*	14*	10*	5.0*	61*	2.1*	480*	43,000*
9-14	W	1010	4.5	22	70	15	6.5	0	13	34	14	8.0	91	0.7	21	24,000
9-27	T	1615	2.7	23	100	15	6.5	0	15	36	13	7.7	89	0.9	16	4,300
10-17	M	1810	.1	16	60	20	7.8	0	193	185	10	8.4	84	6.6	4	240,000
Average			2.4	20	75	15	5.7 to 7.8	0	74	85	12	8.0	88	2.7	14	89,000

*Excluded from average because of unseasonable high flow.

Station 343 - Located on Burgaw Creek approximately 1 mile below effluent from Sewage Treatment Plant at Burgaw.																
Date Col- lected 1955	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Turbid- ity ppm	pH Range		Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %		5 Day B.O.D. ppm		M.P.N. per 100 ml.
7-28	Th	1240	0.5	31	120	40	7.8	0	280	177	20	1.9	25	13	144	-
8-5	F	0815	0.4	25	140	40	7.4	0	320	200	31	0.0	0	37	100	15,000,000
8-18	Th	1055	80*	26*	170*	15*	6.0*	0*	11*	23*	12*	3.6*	44*	2.3*	1,200*	24,000*
9-14	W	1025	13	22	130	15	6.3	0	15	20	16	5.7	65	1.5	130	36,000
9-27	T	1640	7	22	160	10	6.5	0	23	31	14	4.1	47	5.9	280	4,300
10-17	M	1755	0.2	17	160	40	7.4	0	250	156	47	0.2	2	21	28	2,400
Average			4.2	23	140	30	6.0 to 7.8	0	178	117	26	2.4	28	16	120	3,800,000

*Excluded from average because of unseasonable high flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 244 - Located on Burgaw Creek below effluent from sewage treatment plant of Burgaw and 5.9 miles above confluence with Northeast Cape Fear River. Drainage Area (sq. mi.) 17.9

Date Collected	Day Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total as CaCO ₃ ppm	Hardness ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
8-28	Th 1230	0	No water to sample	"	"	-	"	"	from average.				
8-5	F 0730	0	"	"	"	"	"	"	"				
8-18	Th 1125	90*	25*	240*	10*	6.0*	0*	13*	22*	9*	2.9*	2.1*	4,300*
9-14	W 1130	33	21	210	8	6.1	0	12	25	11	3.6	1.3	910
9-27	T 1530	16	22	320	8	6.3	0	18	26	11	3.1	0.9	7,300
10-17	M 1720	5	15	170	15	6.8	0	66	59	17	3.1	1.5	4,300
Average		17	19	230	10	6.1 to 6.0	0	32	37	13	3.3	1.2	4,200

* Excluded from average because of unseasonable high flow.

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 345 - Located on Northeast Cape Fear River 22.5 miles above confluence with Cape Fear River for general river quality. Drainage Area (sq. mi.) 1,500

Date Collected	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Acidity Min. ppm	Acidity Tot. ppm	Hardness as CaCO ₃ ppm	Chloride ppm
7-28	Th	1428L	580	30	210	8	6.1	0	18	-	-	23	13
8-5	F	0837L	460	29	290	15	6.2	0	12	-	-	30	10
8-18	Th	1250H	9,700	26	340	6	5.6	0	9	-	-	18	8
8-30	T	1445L	7,300	27	440	3	5.7	0	9	-	-	21	7
9-14	W	1230H	7,200	23	420	3	5.6	0	8	-	-	19	10
9-27	T	1703M	11,000	23	360	3	5.5	-	-	0	15	16	4
10-17	M	1830L	1,200	16	360	6	6.3	0	20	-	-	29	10
Average			5,350	25	340	6	5.5 to 6.3	0	13	-	-	22	9

Date Collected	Day	Time & Tide	D. O. %	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-28	Th	1428L	2.3	1.3	5,100	-
8-5	F	0837L	2.3	1.8	5,600	7,000
8-18	Th	1250H	2.5	1.8	120,000	7,000
8-30	T	1445L	1.1	1.3	64,000	36
9-14	W	1230H	1.3	1.4	68,000	2,300
9-27	T	1703M	1.7	1.7	130,000	2,500
10-17	M	1830L	1.8	1.9	15,000	2,100
Average			1.9	1.6	58,000	3,500

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER BRAINAGE AREA

Station 345 - Located on Northeast Cape Fear River 22.5 miles above confluence with Cape Fear River for general river quality. Drainage Area (sq. mi.) 1,500

Date Collected	Day	Time	Mean Daily Discharge	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm	M.P.N. per 100 ml.
1956	8-16	Th 1245	600	30	160	2	7.6	0	16	39	9	4.6	1.4	5,700
														930

Station 346 - Located on Millias Pond at Bathing Area.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm	M.P.N. per 100 ml.
1955	7-28	Th 1445	-	32	90	10	9.2	10	30	40	7	12.2	1.4	-
	8-5	F 0825	-	31	27	20	8.8	2	30	40	2	8.7	2.7	2,300
	9-27	T 1730	-	25	50	3	7.3	0	23	26	5	9.6	1.3	730
Average			-	29	55	10	7.3 to 9.2	4	28	35	5	10.2	6.0	-

Station 346A - Located on Prince George Creek above industrial waste from Wilmington Packing Company.

Date Collected	Day	Time	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm	M.P.N. per 100 ml.
11-3	Th	0930	-	13	-	-	6.7	0	41	51	13	5.4	0.8	360
11-7	M	1355	-	12	180	8	6.6	0	42	60	13	6.0	1.0	2,400
11-11	F	1530	-	12	16	8	6.5	0	31	43	10	5.7	3.0	9,300
Average			-	12	-	-	6.5 to 6.7	0	38	51	12	5.7	1.6	4,000

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 346B -- Located on Prince George Creek approximately 1,000 ft. below effluent from catch basin at Wilmington Packing Company. Drainage Area (sq. mi.)

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
11-3-55	Th	0910	--	13	--	--	6.7	0	41	55	27	4.1	39	1.7	--	93,000
11-7-55	M	1330	--	12	210	5	6.9	0	53	75	19	4.6	42	7.1	--	24,000
11-11-55	F	1400	--	12	180	6	6.6	0	37	53	22	4.3	40	11	--	43,000
Average			--	12			6.6 to 6.9	0	44	61	23	4.3	40	6.6	--	53,000

Station 346-1 -- Located on Northeast Cape Fear River 9.0 miles from confluence with Cape Fear River at second power line crossing. Drainage Area (sq. mi.)

Date Collected	Day	Time & Tide	Dis-charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-18-56	W	1430L	--	30	160	5	7.0	0	15	26	12	5.7	75	2.1	--	930
Station 346-2	-- Located on Northeast Cape Fear 6.0 miles above confluence with Cape Fear River. Drainage Area (sq. mi.)															
7-18-56	W	1410L	--	30	210	6	6.7	0	15	26	19	4.7	62	3.1	--	150
Station 346-3	-- Located on Northeast Cape Fear River 5.1 miles above confluence with Cape Fear River. Drainage Area (sq. mi.)															
7-18-56	W	0705H	--	29	220	15	7.0	0	19	102	210	3.4	44	1.4	--	--

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 347 - Located on Northeast Cape Fear River above pollution from City of Wilmington and 1.2 miles above mouth of Smith's Creek. Drainage Area (sq. mi.) 1,710

Date Collected 1955	Mean Daily			Turbidity ppm	Color ppm	pH Range		Alkalinity Total		Hardness as CaCO ₃ ppm	Chloride ppm	Dissolved Oxygen		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
	Time & Tide	Discharge cfs	Temp. °C					Phenol ppm	ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
8-16	T 1155M	2,900	27	25	340	6.4	6.4	0	18	88	150	4.0	49	1.3	25,000	9,300
9-9	F 1000L	20,000	24	6	390	6.0	6.0	0	14	23	7	0.9	11	2.9	390,000	2,100
10-14	F 0850H	2,200	21	15	420	6.2	6.2	0	13	23	23	2.9	32	2.5	37,000	31,000
Average		8,400	24	15	380	6.0 to 6.4	6.0 to 6.4	0	15	45	60	2.6	31	2.2	150,000	14,000

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 347 ~ Located on Northeast Cape Fear River above pollution from City of Wilmington Drainage Area (sq. mi.) 347
and 1.2 miles above mouth of Smiths Creek.

Date Col- lected 1956	Day	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	5 Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	Coliform
			Dis- charge cfs	idity ppm					Phenol, ppm	Total ppm							
7-10	T	0955H	170	15	29	240	15	6.7	0	17	94	240	4.2	0.6	690	23,000	
7-11	W	0645L	170	20	28	340	20	6.6	0	16	70	110	4.6	1.6	1,800	15,000	
7-11	W	1155H	--	--	29	--	--	--	--	--	--	--	4.2	--	--	--	
7-17	T	0945M	230	20	30	260	20	6.4	0	37	79	200	3.8	2.2	3,400	23,000	
7-17	T	1630H	--	--	30	--	--	--	--	--	--	--	4.2	--	--	--	
7-18	W	0655H	270	25	29	240	25	6.9	0	24	244	650	3.1	1.8	3,300	15,000	
7-18	W	1350L	--	15	30	260	15	6.7	0	15	50	78	4.6	1.8	3,300	4,300	
7-23	M	1320M	1,100	15	31	210	15	7.0	0	22	132	380	4.0	2.4	18,000	24,000	
7-27	F	1025H	1,200	8	30	210	8	6.8	0	15	31	28	5.1	1.4	11,000	2,300	
8-9	Th	1215H	280	35	30	340	35	6.8	0	16	400	240	2.9	1.3	2,500	43,000	
8-10	F	0600L	210	10	28	180	10	6.6	0	19	124	290	3.2	1.1	1,600	230,000	
8-13	M	1425H	330	20	31	260	20	6.8	0	17	128	250	3.7	2.2	4,900	15,000	
8-14	T	0905L	680	15	30	210	15	6.7	0	16	130	220	3.7	1.6	7,300	2,300	
8-15	W	0740M	800	10	30	200	10	6.7	0	19	156	280	4.0	2.0	11,000	15,000	
8-16	Th	0700H	900	15	29	200	15	6.7	0	18	480	580	3.4	1.6	9,700	43,000	
8-17	F	0600H	1,400	20	28	260	20	6.7	0	20	380	580	3.7	1.5	14,000	23,000	
Average			600	15	30	240	15	6.4 to 7.0	0	19	178	290	3.9	1.7	6,600	34,000	

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 348 -- Located on Smiths Creek above pollution from Wilmington and above Tide Gate. Drainage Area (sq. mi.) 20.8

Date	Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	5 Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	Coliform
1955	8-16	T	1500	--	27	320	10	6.4	0	36	46	31	1.2	2.5	--	--	24,000
	9-9	F	0702	--	23	420	15	6.2	0	14	38	25	2.1	2.4	--	--	21,000
	9-28	W	1100	--	24	400	12	6.1	0	14	33	12	1.0	0.9	--	--	93,000
	Average			--	25	380	10	6.1 to 6.4	0	21	39	23	1.4	1.9	--	--	46,000

Station 349 -- Located on unnamed tributary to Smiths Creek below domestic sewage effluent from old New Hanover County Prison Camp. Drainage Area (sq. mi.) 0.25

8-16	T	1640	--	26	170	25	25	6.9	0	60	92	37	3.2	5.9	--	--	240,000
9-9	F	0800	--	24	180	30	30	6.5	0	38	89	29	5.3	9.0	--	--	2,400,000
9-23	W	1200	--	24	160	5	5	6.5	0	45	75	25	4.3	1.6	--	--	--
	Average		--	25	170	20	20	6.5 to 6.9	0	48	85	30	4.3	5.5	--	--	--

Station 350 -- Located on Smiths Creek below outfall from City of Wilmington and above effluent from industrial waste lagoon for Timmie Corp. Drainage Area (sq. mi.) 26.3

8-16	T	1600	--	26	260	30	30	6.4	0	44	72	74	0.9	3.5	--	--	430,000
9-9	F	0800	--	24	280	10	10	6.5	0	24	43	19	1.2	2.2	--	--	430,000
9-28	W	1200	--	24	340	6	6	6.5	0	30	48	19	0.7	1.6	--	--	93,000
	Average		--	25	300	15	15	6.4 to 6.5	0	33	54	37	0.9	2.4	--	--	320,000

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.) 26.8

Station 351 - Located on Smiths Creek 1.2 miles below Station 350 on this stream, below outfall from City of Wilmington and industrial waste lagoon for Timmie Corp.

Date Collected	Day	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day BOD ppm 20°C	BOD lbs/day 25°C	Coliform M.P.N. per 100 ml.
1955 8-16	T	1705L	-	27	260	10	6.6	0	30	66	42	0.5	6	3.9	-	24,000
9-9	F	0717L	-	23	340	8	6.5	0	26	43	30	0.5	6	1.8	-	150,000
9-28	W	1300L	-	24	320	5	6.5	0	32	47	19	0.3	4	1.8	-	93,000
Average			-	25	300	8	6.5 to 6.6	0	29	52	30	0.4	5	2.5	-	89,000

Station 352 - Located in mouth of Smiths Creek below outfall for City of Wilmington and industrial waste lagoon for Timmie Corp.

Date Collected	Day	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Acidity Min. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day BOD ppm 20°C	BOD lbs/day 25°C	Coliform M.P.N. per 100 ml.
1955 8-16	T	1215M	-	27	460	20	5.9	0	14	-	44	40	3.3	41	1.4	-	93,000
9-9	F	1025L	-	25	340	10	6.5	0	23	-	35	20	0.6	7	2.0	-	240,000
9-28	W	0800H	-	23	320	3	5.5	-	-	0	1.1	7	0.9	10	1.2	-	910
Average			-	25	380	10	5.5 to 6.5	-	-	-	31	22	1.6	19	1.5	-	110,000

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 352

- Located in mouth of Smiths Creek below outfall for City of Wilmington and industrial waste lagoon for Timmie Corp.

Drainage Area (sq. mi.) 27.6

Date	Collected	Day	Time & Tide	Discharge	Temp.	Color	Turbidity	pH Range	Alkalinity	Hardness	Chloride	D. O.	% Sat.	5 Day	B.O.D.	Coliform
				cfs	°C	ppm	ppm		ppm	as CaCO ₃	ppm	ppm		ppm	lbs/day	M.P.N. per 100 ml.
1956																
7-10	T		1015H	--	29	280	20	6.7	0	122	360	4.2	54	1.1	--	43,000
7-11	W		0700L	--	28	210	10	6.8	0	88	150	1.5	19	5.9	--	750,000
7-11	W		1140H	--	29	--	--	--	--	--	--	3.8	49	--	--	--
7-17	T		1000L	--	30	240	20	6.9	0	74	180	2.9	38	3.0	--	43,000
7-17	T		1615H	--	30	--	--	--	--	--	700	4.2	55	--	--	--
7-23	M		1305M	--	31	240	15	6.8	0	160	400	4.2	56	2.1	--	4,300
7-27	F		1008M	--	30	240	15	6.8	0	40	56	4.9	64	2.0	--	23,000
Average				--	30	240	15	6.7 to 6.9	0	97	310	3.7	48	2.8	--	170,000

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 353 - Located on Northeast Cape Fear River 0.6 of a mile below mouth of Smiths Creek. Drainage Area (sq.mi.) 1,740

Date Col-lected	Day	Time Meets & Tide	Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-16-55	T	1230M	2,900	27	380	25	6.4	0	22	174	458	4.3	53	1.2	23,000	48,000
9-9-55	F	1033L	20,000	24	360	8	5.8	0	10	23	10	1.1	13	3.1	420,000	4,400
Station 353																
7-10-56	T	1030H	170	29	320	25	6.7	0	20	144	420	4.1	53	1.2	1,400	43,000
7-11-56	W	0710L	170	28	280	20	6.6	0	17	97	220	4.2	53	1.3	1,500	23,000
7-11-56	W	1135H	--	29	--	--	--	--	--	--	--	3.5	45	--	--	--
7-17-56	T	1010L	230	30	240	15	6.8	0	21	148	440	3.3	43	2.2	3,400	23,000
7-17-56	T	1610H	--	30	--	--	--	--	--	--	1,200	3.2	43	--	--	--
7-18-56	W	0635H	270	29	240	20	7.0	0	28	470	1,200	3.0	39	1.7	3,100	12,000
7-18-56	W	1335L	--	30	230	20	6.7	0	20	100	250	3.4	45	1.1	--	15,000
7-23-56	M	1250M	1,100	30	240	20	6.9	0	21	110	260	3.8	50	4.1	30,000	9,300
7-27-56	F	1000H	1,200	30	240	25	6.8	0	20	42	70	5.4	59	1.6	13,000	9,300
Average			520	29	260	20	6.6 to 7.0	0	21	159	510	3.8	48	1.9	8,700	19,000

Station 353-1 - Located on Northeast Cape Fear River at U. S. Hwy. 117 Bridge.

Date	Day	Time Meets & Tide	Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-11-56	W	0714L	--	28	--	--	--	--	--	--	--	4.2	53	--	--	--
7-11-56	W	1130H	--	29	--	--	--	--	--	--	--	3.4	44	--	--	--
7-17-56	T	1020L	--	30	--	--	--	--	--	--	610	3.3	43	--	--	--
7-17-56	T	1605H	--	30	--	--	--	--	--	--	1,200	3.0	40	--	--	--
Average			--	29	--	--	--	--	--	--	--	3.5	45	--	--	--

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 354 - Located on Northeast Cape Fear River below part of pollution from Wilmington vicinity and 0.5 of a mile above confluence with Cape Fear River. (Avg. of 3 points)

Station 354 - Located on Northeast Cape Fear River below part of pollution from Wilmington vicinity and 0.5 of a mile above confluence with Cape Fear River. (Avg. of 3 points)														
Mean Daily														
Date Collected	Day	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	Solids (ppm)		pH Range	Alkalinity		Hardness as CaCO ₃ ppm		
							Suspended	Dissolved		Phenol	Total			
1955 8-9	T	1620M	285*	30*	260*	25*	230*	30*	6.7*	0*	25*	540*		
8-22	M	1340H	11,000	28	400	35	-	-	6.0	0	9	25		
8-24	W	1547H	8,900	25	500	50	-	-	6.2	0	13	28		
8-25	Th	1447H	7,600	25	420	35	-	-	6.0	0	12	27		
8-26	F	1146L	7,400	25	400	2	-	-	5.7	0	11	23		
8-30	T	0845H	9,300	26	360	10	-	-	5.9	0	8	16		
Average			8,800	26	420	25	-	-	5.7 to 6.7	0	11	24		

Date Collected	Day	Time & Tide	Chloride ppm	D.O. %	5 Day B.O.D.		Coliform M.P.N. per 100 ml.
					ppm 20°C	lbs/day 25°C	
1955 8-9	T	1620M	1,200*	3.2*	1.1*	2,100*	6,800*
8-22	M	1340H	9	1.5	1.6	120,000	4,300
8-24	W	1547H	6	2.1	1.5	90,000	7,600
8-25	Th	1447H	5	2.1	1.5	77,000	5,300
8-26	F	1146L	9	1.3	1.9	95,000	9,000
8-30	T	0845H	17	1.3	1.6	100,000	430
Average			9	1.7	1.6	96,000	5,300

* Excluded from average because of unseasonable low flow.

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 354 - Located on Northeast Cape Fear River below part of pollution from Wilmington
vicinity and 0.5 of a mile above confluence with Cape Fear River. (Avg. of 3 points)

Drainage Area (sq.mi.) 1,740

Date Col- lected 1956	Day	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbid- ity ppm	pH		Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day		Coliform
			Dis- charge cfs	Dis- charge cfs				Range	ppm	Total ppm	Phenol. ppm					ppm 20°C	lbs/day 25°C	
7-10	T	1040H	170	170	29	320	35	6.5	0	18	0	50	540	4.0	52	1.6	1,800	43,000
7-11	W	0718L	180	180	28	340	25	6.7	0	18	0	112	260	4.0	51	1.7	2,100	9,300
7-11	W	1122H	-	-	29	-	-	-	-	-	-	-	-	3.1	40	-	-	-
7-17	T	1025L	230	230	30	260	20	6.9	0	26	0	242	780	3.3	43	2.0	3,100	23,000
7-17	T	1600H	-	-	30	-	-	-	-	-	-	-	1,200	3.1	40	-	-	-
7-18	W	0615H	270	270	29	240	20	6.9	0	29	0	510	1,300	3.0	39	1.6	2,900	15,000
7-18	W	1315L	-	-	30	240	15	6.9	0	22	0	260	620	3.0	39	3.1	-	9,300
7-23	M	1235H	1,200	1,200	30	220	20	7.0	0	22	0	90	250	3.5	46	3.6	29,000	15,000
7-27	F	0945M	1,200	1,200	29	360	45	6.7	0	15	0	34	49	3.8	49	1.6	13,000	23,000
8-9	Th	1150H	280	280	30	280	30	6.8	0	20	0	700	600	3.1	41	1.7	3,200	23,000
8-10	F	0622L	220	220	28	260	20	6.6	0	17	0	180	470	3.1	39	0.7	1,000	430,000
8-13	M	1400H	340	340	31	240	20	6.8	0	19	0	208	500	3.3	45	1.0	2,300	430,000
8-14	T	0930L	690	690	30	240	25	6.7	0	18	0	230	490	3.4	45	2.2	10,000	24,000
8-15	W	0805M	800	800	30	180	15	6.7	0	20	0	620	880	3.3	43	2.9	16,000	23,000
8-16	Th	0735H	900	900	29	140	10	6.8	0	24	0	680	1,500	3.4	45	1.9	12,000	230,000
8-17	F	0630H	1,400	1,400	28	170	10	6.8	0	22	0	600	1,200	3.7	47	0.9	8,500	930,000
Average			600	600	29	250	20	6.5 to 7.0	0	21	0	323	710	3.4	44	1.9	8,100	340,000

Excluded from average - indeterminate.

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 354-1 - Located on Cape Fear River at foot of Market Street below part of Drainage Area (sq. mi.)
pollution from City of Wilmington.

Date Collected 1956	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. C. % Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-11	W	0735L	-	28						230*	3.2	-	-
7-11	W	1105H	-	29						-	2.9	-	-
7-17	T	1055L	-	30						890	3.1	-	-
7-17	T	1540M	-	30						1,600	3.4	-	-
7-23	M	1210H	-	30						230*	4.0	-	-
8-9	Th	1130H	-	30	340	35	6.9	0	800	1,000	3.2	1.5	43,000
8-10	F	0645L	-	29						530*	3.0	-	-
8-13	M	1335M	-	31						490*	3.5	-	-
8-14	T	0952L	-	30	240	25	6.7	0	260	490	3.5	2.2	-
8-15	W	0830M	-	30						990*	3.5	-	-
8-16	Th	0758H	-	29						1,500	3.7	-	-
8-17	F	0655H	-	29						1,400*	3.6	-	-
Average			-	30						1,100	3.4	-	-

* Estimated

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 355 - Located on Cape Fear River below part of pollution from City of Wilmington Drainage Area (sq.mi.) 8,800 and 0.9 of a mile below mouth of Northeast Cape Fear River. (Avg. of 3 points)

Date Col- lected 1955	Day	Time & Tide	Mean Daily Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B. O. D. lbs/day 25°C	M. P. N. per 100 ml.	Coliform
8-9	T	1603M	-	30*	280*	35*	6.7*	0*	33*	1,900*	3.6*	43*	1.1*	-	-	9,300*
8-22	M	1320H	-	30	400	30	6.3	0	13	5	1.5	20	1.5	-	-	24,000
8-24	W	1530H	-	26	440	30	6.1	0	12	7	1.8	22	2.0	-	-	16,500
8-25	Th	1431H	-	25	400	30	6.1	0	12	9	1.9	23	1.4	-	-	25,000
8-26	F	1135L	-	25	440	20	5.9	0	12	7	2.3	27	1.7	-	-	9,300
Average			-	27	420	30	5.9 to 6.7	0	12	7	1.9	23	1.7	-	-	19,000

* Excluded from average because of unseasonable low flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 355 - Located on Cape Fear River below part of pollution from City of Wilmington and 0.9 of a mile below mouth of Northeast Cape Fear River. (Avg. of 3 points)

Drainage Area (sq. mi.) 8,800

Date Collected	Day	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm	B.O.D. 25° C	Coliform M.P.N. per 100 ml.
			Discharge cfs	idity					Phenol. ppm	Total ppm			ppm	% Sat.			
7-10	T	1240H	-	60	29	1440	60	6.8	0	26	60	1,320	4.3	56	1.3	-	15,000
7-11	W	0740L	-	30	28	340	95	6.7	0	19	95	230	3.6	46	1.6	-	93,000
7-11	W	1100H	-	-	29	-	-	-	-	-	-	-	3.1	40	-	-	-
7-17	T	1100L	-	20	30	260	300	6.9	0	25	300	1,000	3.1	41	2.7	-	9,300
7-17	T	1535M	-	-	30	-	-	-	-	-	-	1,800	3.4	45	-	-	-
7-18	W	0605H	-	25	29	210	430	6.9	0	27	430	1,100	3.1	40	1.6	-	24,000
7-18	W	1310L	-	20	30	260	310	6.8	0	25	310	830	2.8	37	1.1	-	9,300
7-19	Th	0728H	-	20	29	220	760	6.8	0	31	760	2,600	3.3	44	1.4	-	24,000
7-19	Th	1355L	-	30	29	280	520	6.8	0	28	520	1,300	3.2	42	1.7	-	9,300
7-23	M	1200H	-	20	30	220	100	7.0	0	22	100	200	3.6	47	3.1	-	24,000
7-27	F	0915M	-	65	28	420	24	6.6	0	15	24	30	3.6	46	1.7	-	23,000
8-9	Th	1120H	-	25	30	240	700	6.9	0	20	700	1,400	3.3	43	2.1	-	23,000
8-10	F	0652L	-	30	29	260	380	6.6	0	18	380	580	3.1	40	0.9	-	43,000
8-13	M	1328H	-	20	31	210	192	6.8	0	18	192	480	3.3	44	1.5	-	15,000
8-14	T	1000L	-	20	30	220	300	6.8	0	20	300	630	3.6	47	4.4	-	15,000
8-15	W	0835M	-	20	30	180	480	6.8	0	23	480	1,100	3.5	46	1.6	-	23,000
8-16	Th	0805H	-	10	29	180	780	6.8	0	25	780	1,400	3.7	48	1.8	-	93,000
8-17	F	0705H	-	8	29	160	740	6.8	0	23	740	1,500	3.7	49	1.3	-	930,000
Average			-	25	29	260	380	6.6 to 7.0	0	23	380	1,000	3.4	45	1.9	-	86,000

MAIN RIVER DRAINAGE AREA

Station 355-1 -- Located on Cape Fear River above Buoy "60" half way between Station 355 and Station 356.

Date Collected	Day & Tide	Time Mean Daily Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
							Phenol. ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
7-11-56	W	0745L	29							230*	3.6	46			
7-11-56	W	1052H	29							-	3.4	44			
7-17-56	T	1105L	30							1,200	3.3	44			
7-17-56	T	1530M	30							2,000	3.5	47			
7-23-56	M	1155H	30							250	3.7	49			
8-9-56	Th	1115H	30							1,400*	3.3	43			
8-10-56	F	0700L	29							620*	2.9	38			
8-13-56	M	1320M	31							480*	3.3	44			
Average			30							880	3.4	44			

* Estimated

Station 356 -- Located on Cape Fear River below part of pollution from City of Wilmington and 0.1 of a mile above mouth of Greenfield Creek.
(Avg. of 3 points)

Date	Day & Tide	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
										ppm	% Sat.	ppm 20°C	lbs/day 25°C	
8-9-55	T	1543H	30*	170*	6.9*	0*	38*	860*	2,300*	4.0*	53*	1.1*	-	24,000*
8-22-55	M	1310H	30	35	6.3	0	14	39	6	1.4	18	1.5	-	9,300
8-24-55	W	1505H	26	30	6.1	0	12	31	7	1.5	18	1.7	-	15,000
8-25-55	Th	1416H	25	25	6.0	0	13	30	7	1.9	23	1.4	-	12,000
8-26-55	F	1110L	25	25	5.9	0	12	23	9	1.8	21	1.8	-	4,000
Average			27	30	5.9 to 6.9	0	13	31	7	1.7	20	1.6	-	10,000

* Excluded from average because of unseasonable low flow.

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 356 - Located on Cape Fear River below part of pollution from City of Wilmington Drainage Area (sq.mi.) 8,810 and 0.1 of a mile above mouth of Greenfield Creek. (Avg. of 3 points)

Date Col- lected 1956	Day & Tide	Time	Mean Daily		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
			Dis- charge cfs	Temp. °C		Phenol. ppm	Total ppm							
7-10-56	T	1255H	-	29	6.8	0	30	90	1,800	4.3	57	1.6	-	75,000
7-11-56	W	0750L	-	29	6.7	0	17	96	210	3.7	47	1.6	-	23,000
7-11-56	W	1045H	-	29	-	-	-	-	-	3.1	40	-	-	-
7-17-56	F	1110L	-	30	6.7	0	23	390	1,300	3.1	41	1.7	-	9,300
7-17-56	T	1524M	-	30	-	-	-	-	2,200	3.7	49	-	-	-
7-23-56	M	1140H	-	30	6.8	0	21	120	290	3.5	46	3.2	-	9,300
7-27-56	F	0900M	-	28	6.6	0	14	25	29	3.5	44	1.5	-	23,000
8-9-56	Th	1105H	-	30	6.9	0	22	1,200	1,300	3.3	43	1.5	-	15,000
8-10-56	F	0710L	-	29	6.6	0	19	280	660	2.9	38	0.8	-	43,000
8-13-56	M	1312H	-	30	6.7	0	20	292	480	3.3	43	1.6	-	-
8-14-56	T	1015L	-	30	6.8	0	21	460	950	3.4	45	3.2	-	9,300
8-25-56	W	0846M	-	30	6.8	0	26	560	1,400	3.5	46	1.5	-	150,000
8-16-56	Th	0815H	-	29	6.9	0	27	2,000	2,000	3.9	51	1.3	-	93,000
8-27-56	F	0715H	-	29	6.8	0	26	1,500	1,700	4.0	53	1.0	-	230,000
Average			-	29	6.6 to 6.9	0	22	584	1,100	3.5	46	1.7	-	62,000

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 357 - Located at outlet to Greenfield Lake.

Station 357 - Located at outlet to Greenfield Lake.													Drainage Area (sq. mi.)			
Date Collected	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % Sat.	5 Day B.O.D. ppm		Coliform M.P.N. per 100ml.	
					ppm	ppm		Phenol. ppm	Total ppm				20°C	25°C		
9-1-55	Th	1200M	-	30	140	8	-	0	30	144	100	6.7	88	2.2	730	
9-28-55	W	0900H	-	23	400	6	6.5	0	17	30	8	6.0	69	4.2	2,400	
10-25-55	T	1620H	-	16	100	3	6.8	0	24	36	9	6.8	68	1.0	2,400	
Average			-	23	210	6	6.5 to 6.8	0	24	37	39	6.5	75	2.5	1,800	

TABIE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 357-2 - Located on Cape Fear River below most of pollution from City of Wilmington at Buoy C "55A". Drainage Area (sq. mi.)

Date	Collected	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D.O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
7-11	W		0805L	-	29						210 est.	3.3	42		
7-11	W		1030H	-	29						-	3.0	38		
7-17	T		1124L	-	30						1,600	3.1	41		
7-17	T		1515M	-	30						2,600	3.6	49		
7-23	M		1130H	-	30						450*	3.5	46		
8-9	Th		1050H	-	29						1,700*	3.4	45		
8-10	F		0724L	-	29						880*	3.0	39		
8-13	M		1258M	-	30						1,880*	3.7	49		
8-14	T		1033L	-	30						1,130*	3.5	46		
8-15	W		0858M	-	30						1,500*	3.7	49		
8-16	Th		0830H	-	29						2,400*	4.2	55		
8-17	F		0730H	-	29						2,300*	4.4	58		
Average				-	30						1,500	3.5	46		

* Estimated

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 357-4 - Located on Cape Fear River at Fl G 4 Sec. "55" below all pollution from City of Wilmington and vicinity. Drainage Area (sq. mi.)

Date Col- lected 1956	Day	Time & Tide	Mean Daily Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. % Sat.	5 Day B.O.D. ppm 20° C 25° C	Coliform M.P.N. per 100 mL.
7-11	W	0808L	-	29						400 est.	3.2	41	
7-11	W	1025M	-	29						-	3.1	40	
7-17	T	1128L	-	30						1,700	3.3	44	
7-17	T	1505M	-	30						2,800	3.6	49	
7-23	M	1120H	-	30						500*	3.8	50	
8-9	Th	1045H	-	29						1,900*	3.6	47	
8-10	F	0730L	-	29						990*	3.2	42	
8-13	M	1246M	-	30						1,080*	3.7	49	
8-14	T	1040L	-	30						1,220*	3.5	46	
8-15	W	0904L	-	30						1,550*	3.7	49	
8-16	Th	0835H	-	29						2,600	4.2	56	
8-17	F	0736H	-	29						2,600*	4.5	60	
Average			-	30						1,600	3.6	48	

*Estimated

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 358 -- Located on Cape Fear River below all pollution from Wilmington and vicinity and 0.4 of a mile above mouth of Brunswick River. (Avg. of 3 points) Drainage Area (sq.mi.) 8,810

Date Col-lected 1955	Tide & Time	Mean Daily Dis-charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	Coliform M.P.N. per 100 ml.
8-9	T 1505H	--	30*	200*	50*	7.1*	0*	1,390*	4,000*	5.1*	67*	1.4*	10,000*
8-22	M 1245H	--	29	460	60	6.3	0	41	9	1.7	22	1.5	24,000
8-24	W 1450H	--	26	500	30	6.1	0	32	8	1.5	18	1.9	21,000
8-25	Th 1353H	--	26	300	20	6.0	0	31	7	1.7	21	1.6	7,000
8-26	F 1045L	--	25	480	25	6.0	0	29	9	1.8	21	1.9	5,200
8-30	T 0900H	--	26	420	15	5.8	0	18	16	1.3	16	1.5	430
Average		--	26	440	30	5.8 to 7.1	0	30	10	1.6	20	1.7	12,000

* Excluded from average because of unseasonable low flow.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 358 -- Located on Cape Fear River below all pollution from Wilmington and vicinity and 0.4 of a mile above mouth of Brunswick River. Drainage Area (sq. mi.) 8,810

Date Col- lected	Day	Time & Tide	Mean Daily Dis- charge cfs	Temp. °C	Color ppm	Tur- bid- ity ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O. ppm	% Sat.	5 Day ppm 20° C	B.O.D. lbs/day 25° C	M.P.N. per 100 ml.	Coliform
7-10	T	1325H	--	29	260	20	6.8	0	36	110	1,800*	5.8	76	--	--	12,000	
7-11	W	0815L	--	29	440	50	6.7	0	20	150	400	3.0	38	1.5	--	43,000	
7-11	W	1018M	--	29	--	--	--	--	--	--	--	3.0	38	--	--	--	
7-17	T	1132L	--	30	240	20	6.5	0	25	600	1,800	3.2	43	1.7	--	43,000	
7-17	T	1500M	--	30	--	--	--	--	--	--	3,000	3.8	51	--	--	--	
7-23	M	1110H	--	30	260	30	6.9	0	27	230	530	2.8	37	2.2	--	9,300	
7-27	F	0840L	--	28	460	85	6.6	0	15	25	25	3.4	43	2.2	--	43,000	
8-9	Th	1035H	--	29	260	35	6.9	0	30	1,300	2,100	3.7	49	1.5	--	43,000	
8-10	F	0740L	--	29	340	30	6.7	0	22	480	1,100	3.2	42	0.9	--	15,000	
8-13	M	1240M	--	30	180	15	6.8	0	26	530	1,300	4.0	53	1.8	--	7,500	
8-14	T	1055L	--	30	200	15	6.8	0	22	540	1,300	3.8	50	1.8	--	150,000	
8-15	W	0910L	--	30	160	10	6.8	0	25	620	1,600	3.8	51	1.4	--	23,000	
8-16	Th	0845M	--	29	140	8	6.9	0	30	1,800	2,700	4.3	57	1.6	--	23,000	
8-17	F	0745H	--	29	140	8	7.0	0	34	2,100	2,900	4.6	61	0.9	--	23,000	
Average			--	29	260	25	6.5 to 7.0	0	26	707	1,600	3.7	49	1.6	--	37,000	

*Estimated

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 359 -- Located on Brunswick River at U. S. Hwy. 74 and 76 Bridge.															Drainage Area (sq. mi.) 15.2	
Date Collected	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D.		Coliform M.P.N. per 100 ml.	
								Phenol. ppm	Total ppm				ppm 20°C	lbs/day 25°C		
9-1-55	Th	1220M	--	26	320	8	--	0	38	48	32	2.2	1.9	--	730	
9-12-55	W	1300L	--	25	380	30	6.3	0	12	20	5	1.3	1.5	--	930	
Station 359																
7-10-56	T	1140H	--	29	260	20	6.7	0	20	380	480	3.9	1.5	--	23,000	
7-30-56	M	1130M	--	20	360	50	6.4	0	12	18	11	2.9	1.3	--	2,300	
8-14-56	T	1430H	--	30	240	15	6.6	0	16	68	84	3.9	2.1	--	4,300	
8-15-56	W	1230L	--	31	230	20	6.6	0	14	25	26	3.2	1.9	--	910	
8-16-56	Th	1125L	--	31	240	10	6.5	0	11	24	12	2.9	1.4	--	9,300	
Average																
			--	30	260	25	6.4 to 6.7	0	15	103	120	3.4	1.6	--	8,000	
Station 359A -- Located in mouth of Brunswick River.																
8-10-56	F	0748L	--	29	280	20	6.7	0	18	280	720	3.0	0.9	--	9,300	
8-13-56	M	1230M	--	30	220	20	6.8	0	25	1,080	1,200	3.7	1.8	--	15,000	
8-14-56	T	1105L	--	31	200	15	6.8	0	21	440	700	3.1	3.4	--	2,300	
8-15-56	W	0917M	--	30	180	15	6.8	0	23	480	910	3.8	1.9	--	93,000	
Average																
			--	30	220	20	6.7 to 6.8	0	22	570	880	3.4	2.0	--	30,000	

MAIN RIVER DRAINAGE AREA

Station 359-1 - Located on Cape Fear River below all pollution from Wilmington and vicinity and 0.2 of a mile below mouth of Brunswick River.

vicinity and 0.2 of a mile below mouth of Brunswick River.														Coliform				
Date	Col- lected	Day	Time & Tide	Mean Daily Dis- charge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.	
									Phenol.	Total			% Sat.	ppm				
1956																		
7-11		W	0820L	-	29							400*	3.1	40				
7-11		W	1013M	-	29							400*	3.2	41				
7-17		T	1142L	-	30							1,900	3.2	43				
7-17		T	1455M	-	30							3,200	3.6	49				
7-23		M	1107H	-	30							1,000*	3.0	40				
Average				-	30							1,400	3.2	43				
* Estimated																		

Station 359-2 - Located on Cape Fear River below all pollution from Wilmington and vicinity and 0.6 of a mile below mouth of Brunswick River.

Station 359-2 - Located on Cape Fear River below all pollution from Wilmington and vicinity and 0.6 of a mile below mouth of Brunswick River.										Drainage Area (sq. mi.)	
7-11	W	0825L	-	29				400*	3.1	40	
7-11	W	1010M	-	29				400*	3.3	42	
7-17	T	1148L	-	30				2,100	3.3	44	
7-17	T	1450M	-	30				3,400	3.6	49	
7-23	M	1100H	-	30				1,600*	3.1	41	
Average			-	30				1,600	3.3	43	

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 359-3 - Located on Cape Fear River below all pollution from Wilmington and vicinity and 1.4 miles below mouth of Brunswick River. Drainage Area (sq. mi.)

Date Collected	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
7-11	W	0835L	-	29							400*	3.1	40	-	-	-
7-11	W	1000M	-	29							400*	3.6	46	-	-	-
7-17	T	1200L	-	30							2,200	3.4	45	-	-	-
7-17	T	1442M	-	30							3,600	3.9	53	-	-	-
7-23	M	1045H	-	30							2,200*	3.3	44	-	-	-
8-15	W	0932L	-	30	170	10	6.8	0	27	660	1,600	3.9	52	2.0	-	43,000
8-17	F	0600H	-	29	120	10	7.0	0	41	1,900	4,100	5.1	68	1.1	-	9,300
Average			-	30			6.8 to 7.0	0			2,100	3.8	50	-	-	-

* Estimated

Station 359-4 - Located on Cape Fear River below all pollution from Wilmington and vicinity and 2.3 miles below mouth of Brunswick River. Drainage Area (sq. mi.)

7-11	W	0845L	-	29							400*	3.1	40			
7-11	W	0955M	-	29							400*	3.9	50			
7-17	T	1205L	-	30							2,400	3.7	49			
7-17	T	1435M	-	30							3,600	4.0	54			
7-23	M	1040H	-	30							2,800 est.	3.9	53			
Average			-	30							1,900	3.7	49			

* Estimated

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 359-5 - Located on Cape Fear River below all pollution from Wilmington and vicinity and 3.1 miles below mouth of Brunswick River. Drainage Area (sq. mi.)

Date Collected	Day & Tide	Mean Daily			Temp. °C	Color ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day BOD ppm	M.P.N. per 100 ml.
		Time	Discharge cfs	idity ppm				Phenol. ppm	Total ppm			ppm	% Sat.		
7-17-56	T	1245L	-	-	30	-	-	-	-	-	2,500*	4.3	58	-	-
7-17-56	T	1428M	-	-	30	-	-	-	-	-	3,700	4.7	64	-	-
7-23-56	M	1030H	-	-	30	-	-	-	-	-	3,400*	4.2	57	-	-
Average			-	-	30	-	-	-	-	-	3,200	4.4	60	-	-
* Estimated															

Station 360 - Located on Cape Fear River at Campbell Island below all pollution from Wilmington and vicinity. (Avg. of 3 points)															
Date	Day & Tide	Mean Daily			Temp. °C	Color ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day BOD ppm	M.P.N. per 100 ml.
		Time	Discharge cfs	idity ppm				Phenol. ppm	Total ppm			ppm	% Sat.		
8-9-55	T	1425H	3,300*	30*	30	130*	25*	0*	79*	3,020*	8,600*	5.8*	76*	1.4*	680*
8-22-55	M	1215H	27,000	30	30	440	50	0	14	170	19	1.8	24	1.4	4,300
8-23-55	T	1812L	31,000	26	26	640	130	0	14	25	11	2.4	30	2.0	17,000
8-24-44	W	1408H	40,000	27	27	520	50	0	14	31	12	2.0	25	2.2	17,000
8-25-55	Th	1315M	55,000	26	26	480	35	0	14	31	11	1.8	22	1.3	24,000
8-26-55	F	1002L	49,000	25	25	480	25	0	12	26	9	2.2	26	1.8	4,300
Average			40,000	27	27	520	60	0	14	57	12	2.0	25	1.7	13,000

* Excluded from average because of unreasonable low flow.

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 360 - Located on Cape Fear River at Campbell Island below all pollution from Wilmington and vicinity. Drainage Area (sq. mi.) 8,990

Date Col- lected	Day	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
			Dis- charge cfs							Phenol. ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
7-17	T	1230L	--		30	260	30	7.0	0	0	34	950	2,600	4.2	57	1.5	--	23,000
7-17	T	1410L	--		--	--	--	--	--	--	--	--	3,800	4.9	66	--	--	--
7-23	M	1010H	--		30	180	20	7.2	0	0	42	170	3,800	4.9	67	1.9	--	2,400
7-27	F	0750L	--		28	640	120	6.8	0	0	16	27	34	3.5	44	1.7	--	9,300
8-9	Th	1000H	--		29	240	30	7.4	0	0	50	2,600	5,500	4.5	62	1.4	--	4,300
8-10	F	0835L	--		29	340	20	7.0	0	0	33	1,020	2,700	3.7	49	1.2	--	15,000
8-13	M	1150L	--		30	130	15	7.0	0	0	40	1,080	3,800	4.4	60	1.6	--	23,000
8-15	W	0955L	--		30	160	15	6.9	0	0	32	1,200	2,400	4.4	59	1.8	--	93,000
8-17	F	0830H	--		29	120	15	7.3	0	0	51	3,000	6,400	5.1	70	1.1	--	2,300
Average			--		29	260	35	6.8 to 7.4	0	0	37	1,256	3,500	4.4	59	1.5	--	22,000

Station 360-1 - Located on Cape Fear River west of Keg Island at Buoy N "40".

7-17	T	1250M	--		30								3,600*	5.1	69			
7-17	T	1405H	--		30								4,900	5.3	73			
7-23	M	1000H	--		30								4,500*	5.5	75			
Average			--		30								4,300	5.3	72			

*Estimated

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 361 - Located on Cape Fear River above pollution from Carolina Beach,
Kure Beach and 1.7 miles above Western mouth of Snows Cut.
(Avg. of 3 points) Drainage Area (sq. mi.) 9,000

Date Collected	Day	Time & Tide	Mean Daily			Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm	M.P.N. per 100 ml.
			Discharge cfs	Temp. °C	Color ppm			Phenol ppm	Total ppm			ppm	% Sat.		
8-8-55	M	1550L	3,600*	32*	180*	25*	7.9*	0*	63*	3,400*	7,400*	6.9*	93*	1.6*	630*
8-22-55	M	1150H	27,000	31	500	95	6.3	0	13	830	44	2.2	30	1.7	4,300
8-23-55	T	1742L	31,000	26	660	150	6.5	0	17	25	20	3.3	41	2.2	4,700
8-24-55	W	1342H	40,000	26	540	50	6.4	0	17	35	19	1.9	23	2.0	3,700
8-25-55	Th	1248H	55,000	26	480	40	6.2	0	13	38	12	2.2	26	1.4	7,000
8-26-55	F	0926L	49,000	25	500	35	6.2	0	15	26	18	2.8	33	1.9	2,700
Average			40,000	27	540	75	6.2 to 7.9	0	15	191	23	2.5	31	1.8	4,500

*Excluded from average because of unseasonable low flow.

Station 361																
7-17-56	T	1310M	30	180	20	7.2	0	45	1,440	4,600	5.0	68	1.9	2,300	-	-
7-17-56	T	1350M	30	-	15	-	-	-	220	5,800	5.1	71	-	-	460,000	-
7-23-56	M	0935H	30	170	150	7.4	0	51	50	5,800	5.4	75	2.2	9,300	-	-
7-27-56	F	0720M	28	660	15	6.9	0	20	2,200	6,000	5.9	79	1.6	9,300	-	-
8-8-56	W	0838H	28	130	15	7.5	0	54	2,200	4,600	5.0	68	2.7	9,300	-	-
8-15-56	W	1022L	30	170	15	7.3	0	47	4,000	8,500	5.5	76	3.5	2,300	-	-
8-17-56	F	0855L	28	100	6	7.6	0	65	-	-	-	-	1.1	2,300	-	-
Average			29	240	35	6.9 to 7.6	0	47	1,700	5,100	5.1	69	2.2	81,000	-	-

TABIE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 361-D - Located at bathing area at Pretty Pond on Lilliput Creek North of Southport. Drainage Area (sq. mi.)

Date Collected	Day	Time	Dis-charge cfs	Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
						ity ppm	idity ppm	Range	Phenol. ppm	Total ppm			ppm	Sat. %		
10-10-55	F	0805	-	24	260	1	4.6	-	0	19	20	4	6.6	77	3.0	110,000
10-12	T	1050	-	24	240	2	4.3	-	0	15	15	7	6.0	70	1.5	9,300
11-1	T	1545	-	16	170	8	4.6	-	0	10	14	13	6.4	66	1.0	930
Average			-	21	220	4	4.3 to 4.6	-	0	15	16	8	6.3	71	1.8	40,000

Station 362 - Located on Inland Waterway 2.3 miles above mouth of Kings Creek which contains effluent from sewage treatment plant at Hollyridge. Drainage Area (sq. mi.)

Date Collected	Day	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
			Dis-charge cfs	ity ppm			ity ppm	idity ppm	Range	Phenol. ppm	Total ppm			ppm	Sat. %		
8-29	M	1135L	-	20	27	260	20	7.4	0	72	2,400	6,000	4.4	54	1.4	-	240
9-7	W	1447H	-	25	27	340	25	7.4	0	74	2,600	7,000	4.1	51	1.1	-	240
9-15	Th	0753H	-	15	22	280	15	7.2	0	64	2,000	5,700	6.0	68	1.0	-	430
Average			-	20	25	300	20	7.2 to 7.4	0	70	2,300	6,200	4.8	58	1.2	-	300

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 363 - Located on King Creek above effluent from sewage treatment plant at Hollyridge. Drainage Area (sq.mi.) 0.42

Date Col- lected	Day	Time	Dis- charge cfs	Temp. °C	Color ppm	Tur- bidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day ppm 20°C	B.O.D. lbs/day 25°C	M.P.N. per 100 ml.
								Phenol.	Total			ppm	% Sat.			
8-29	M	1105	-	25	120	10	6.7	0	26	54	12	5.7	68	5.9	-	93,000
9-7	W	1616	-	24	190	10	6.5	0	24	36	10	6.6	78	0.5	-	39,000
9-15	Th	1005	-	22	120	6	6.2	0	10	36	8	7.2	82	0.6	-	24,000
Average			-	24	140	9	6.2 to 6.7	0	20	42	10	6.5	76	2.3	-	52,000

Station 364 - Located on King Creek below effluent from sewage treatment plant at Hollyridge. Drainage Area (sq. mi.)

8-29	M	1130	-	25	240	8	6.6	0	22	46	12	5.0	60	1.3	-	4,300
9-7	W	1637	-	26	400	10	6.2	0	16	25	9	5.3	65	0.9	-	150,000
9-15	Th	1020	-	22	280	5	6.3	0	10	32	8	4.9	56	1.5	-	360
Average			-	24	300	8	6.2 to 6.6	0	16	34	10	5.1	60	1.2	-	52,000

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 365 - Located in mouth of King Creek, 0.3 of a mile from Inland Water Channel and below pollution from Hollyridge.															Drainage Area (sq. mi.) 5.92		
Date Collected	Day	Time	Mean Daily			Color ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	5 Day B.O.D. ppm		Coliform M.P.N. per 100 ml.		
			Discharge cfs	Temp. °C	idity ppm			Phenol ppm	Total ppm				20°C	25°C			
1955 8-29	M	1050L	-	27	15	400	6.9	0	54	2,100	2,800	2.8	2.6	-	4,300		
9-7	W	1424M	-	27	15	360	7.2	0	60	1,300	350	4.3	1.1	-	4,300		
9-15	Th	0730H	-	22	20	400	6.9	0	44	1,100	2,000	5.9	1.1	-	24,000		
Average			-	25	15	380	6.9 to 7.2	0	53	1,500	1,700	4.3	1.6	-	11,000		

Station 366 - Located on Inland Waterway at Morris Landing 1.0 mile below mouth of King Creek containing effluent from sewage treatment plant at Hollyridge.															Drainage Area (sq. mi.)		
8-29	M	1025L	-	27	20	320	7.3	0	68	2,000	4,800	4.1	1.2	-	4,300		
9-7	W	1409M	-	26	20	360	7.3	0	64	1,400	400	3.9	1.2	-	1,500		
9-15	Th	0715H	-	22	15	320	7.1	0	62	1,600	4,200	6.1	1.0	-	430		
Average			-	25	20	340	7.1 to 7.3	0	65	1,700	3,100	4.7	1.1	-	2,100		

Station 367 - Located on Inland Waterway at Surf City in Shellfish Water.															Drainage Area (sq. mi.)		
8-29	M	1000L	-	27	25	260	7.4	0	72	2,100	5,100	4.6	1.5	-	240		
9-7	W	1337M	-	26	25	320	7.4	0	70	1,600	500	4.2	1.2	-	1,500		
9-15	Th	0630H	-	22	15	280	7.0	0	60	1,700	4,600	6.0	0.8	-	150		
Average			-	25	20	280	7.0 to 7.4	0	67	1,800	3,400	4.9	1.2	-	630		

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 368 - Located on Inland Waterway at Sloop Point in shellfish water. Drainage Area (sq. mi.)

Date Collected 1955	Day & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	pH Range		Alkalinity Total ppm		Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	5 Day B.O.D. lbs/day 20°C 25°C		Coliform M.P.N. per 100 ml.
		Time	Discharge cfs													
8-29	M	0930M	-	27	180	15	7.5	0	86		4,400	8,700	4.5	1.3	-	15
9-7	W	1315H	-	26	140	10	7.8	0	100		4,900	15,000	5.2	1.1	-	430
9-15	Th	0613H	-	22	210	15	7.6	0	80		2,900	8,900	6.0	0.9	-	150
Average			-	25	180	15	7.5 to 7.8	0	89		4,100	11,000	5.2	1.1	-	200

Station 369 - Located on Inland Waterway at Ref. Marker "96" in Shellfish Water. Drainage Area (sq. mi.)

8-4	Th	1000H	-	30	80	30	8.0	0	124		6,100	19,200	5.4	0.8	-	43
9-8	Th	1200H	-	27	160	15	7.9	0	106		4,800	14,000	6.0	1.1	-	93
9-13	T	1055L	-	24	110	10	7.9	0	100		4,800	14,000	5.9	0.9	-	430
Average			-	27	120	20	7.9 to 8.0	0	110		5,200	16,000	5.8	0.9	-	190

Station 370 - Located on Inland Waterway near Hampstead in Shellfish Water. Drainage Area (sq. mi.)

8-4	Th	1020H	-	30	50	25	8.0	0	124		6,400	19,800	5.3	0.7	-	23
9-8	Th	1230H	-	27	90	10	7.8	0	106		4,700	15,000	5.1	0.7	-	430
9-13	T	1030L	-	24	140	20	7.9	0	100		4,600	14,000	5.8	0.6	-	93
Average			-	27	95	20	7.8 to 8.0	0	110		5,200	16,000	5.4	0.7	-	180

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 371 - Located on Inland Waterway at Ref. Marker "112" in shellfish water. Drainage Area (sq. mi.)

Date Col- lected 1955	Time & Day Tide	Mean Daily		Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
		Dis- charge cfs	bid- ity ppm										
8-4	Th 0735H	-	20	29	30	20	8.0	0	6,300	18,600	5.4	0.5	9.1
9-6	T 1750L	-	10	27	85	10	7.7	0	4,900	15,000	4.6	1.1	73
9-13	T 0830M	-	15	24	70	15	8.0	0	5,500	17,000	6.1	0.7	23
Average		-	15	27	60	15	7.7 to 8.0	0	5,600	17,000	5.4	0.8	35

Station 372 - Located on Inland Water near Ref. Marker "122" in shellfish water. Drainage Area (sq. mi.)

Date Col- lected 1955	Time & Day Tide	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
8-4	Th 0710H	28	37	20	8.0	0	5,700	18,600	5.8	73	930
9-6	T 1725L	27	65	8	7.7	0	5,800	15,000	4.8	59	430
9-13	T 0800M	24	50	8	8.0	0	5,600	16,000	5.9	69	93
Average		26	50	10	7.7 to 8.0	0	5,700	17,000	5.5	67	480

Station 373 - Located in Moore Inlet East of effluent from sewage treatment plant for Town of Wrightsville Beach. Drainage Area (sq. mi.)

Date Col- lected 1955	Time & Day Tide	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. % ppm	5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
9-6-55	T 1700L	26	85	15	7.8	0	6,300	19,000	5.8	71	43,000
9-16	F 0830H	24	75	10	7.8	0	5,600	17,000	6.4	75	<36

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 374 - Located on Inland Waterway at Wrightsville Beach bridge for control on pollution from Wrightsville Beach and vicinity.

Date Collected	Day	Time & Tide	Mean Daily		Temp. °C	Color ppm	Turbidity		pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.	Coliform
			Discharge cfs	idity ppm			Phenol. ppm	Total ppm		% Sat.								
1955 8-3	W	0950M	-	15	30	24	15	7.9	0	138	5,900	18,800	4.5	69	2.0	-	23	
9-6	T	1755L	-	15	27	90	15	7.7	0	106	5,000	15,000	5.0	62	1.0	-	1,500	
9-16	F	0745H	-	8	24	60	8	7.8	0	112	6,000	17,000	6.5	76	0.6	-	93	
Average			-	15	27	60	15	7.7 to 7.9	0	119	5,600	17,000	5.3	69	1.2	-	540	

Station 375 - Located in Wrightsville Sound as control on pollution from Wrightsville Beach and community of Wrightsville.

Date Collected	Day	Time & Tide	Temp. °C	Color ppm	pH	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
						Total ppm	Phenol. ppm			ppm	% Sat.		
8-3	W	0930M	-	46	30	7.9	0	6,000	18,000	5.2	68	0.7	43
9-6	T	1735L	-	55	10	7.7	0	6,500	16,000	5.0	62	0.9	21,000
9-16	F	0755H	-	60	8	7.8	0	6,100	17,000	6.6	78	0.5	150
Average			-	55	15	7.7 to 7.9	0	6,200	17,000	5.6	69	0.7	7,100

Station 376 - Located on Inland Waterway at Ref. Marker "L30" in shellfish water.

Date Collected	Day	Time & Tide	Temp. °C	Color ppm	pH	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. per 100 ml.
						Total ppm	Phenol. ppm			ppm	% Sat.		
8-3	W	1035M	-	34	20	7.9	0	6,100	18,600	5.3	70	0.3	240
9-6	T	1647L	-	90	15	7.7	0	5,400	15,000	4.9	60	0.6	930
9-16	F	0755H	-	40	6	7.7	0	5,700	17,000	6.0	71	0.4	9.1
Average			-	55	15	7.7 to 7.9	0	5,700	17,000	5.4	67	0.4	390

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 377 - Located on Inland Waterway at Ref. Marker "139" in shellfish water. Drainage Area (sq. mi.)																
Date Collected	Day	Time & Tide	Mean Daily Discharge		Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		Coliform M.P.N. per 100 ml.	
			cfs	bid-ity ppm					Phenol. ppm	Total ppm			ppm	% Sat.		ppm 20°C
8-3	W	1335L	-	20	31	65	20	7.9	0	128	5,800	17,700	5.8	77	1.2	240
9-1	Th	0940M	-	15	27	90	15	-	0	110	5,500	18,000	5.1	76	0.9	23
9-16	F	0735H	-	8	24	50	8	7.8	0	112	5,800	18,000	6.0	71	0.3	930
Average			-	15	27	70	15	7.8 to 7.9	0	117	5,700	18,000	5.6	75	0.8	400
Station 378 - Located on Inland Waterway at Ref. Marker "145" in shellfish water. Drainage Area (sq. mi.)																
8-3	W	1314L	-	45	31	170	45	7.9	0	134	5,900	18,300	5.7	76	1.5	23
9-1	Th	0925M	-	15	27	75	15	-	0	110	5,500	18,000	5.0	62	0.5	240
9-16	F	0715H	-	20	24	120	20	7.8	0	114	5,300	16,000	6.0	71	0.6	73
Average			-	25	27	120	25	7.8 to 7.9	0	119	5,600	17,000	5.6	70	0.9	110
Station 379 - Located on Inland Waterway at Ref. Marker "153" opposite dredged inlet to ocean and in shellfish water. Drainage Area (sq. mi.)																
8-3	W	1255L	-	35	32	65	35	8.1	0	122	6,000	18,200	5.7	77	1.4	43
9-1	Th	0910M	-	10	26	80	10	-	0	110	5,100	18,000	5.0	61	0.9	430
9-14	W	0620H	-	20	24	120	20	8.0	0	116	5,600	17,000	6.6	78	1.6	43
Average			-	20	27	90	20	8.0 to 8.1	0	116	5,600	18,000	5.8	72	1.3	170

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 380 - Located on Inland Waterway in the Eastern mouth of Snows Cut in shellfish water. Samples taken at 12' depth. Drainage Area (sq. mi.)

Date Collected	Day	Time & Tide	Mean Daily			pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. lbs/day per 100 ml.
			Discharge cfs	Temp. °C	Color ppm	idity ppm	Phenol. ppm	Total ppm			ppm	Sat. %		
8-2-55	T	1401L	-	30	80	25	0	95	4,600	12,200	6.4	84	0.9	240
9-1-55	Th	0900M	-	26	420	20	0	20	262	6,600	3.9	48	1.7	1,500
9-14-55	W	0555H	-	24	120	15	0	116	6,000	18,000	6.8	80	1.1	240
Average			-	27	210	20	0	77	3,600	12,000	5.7	71	1.2	660

Station 381 - Located on Inland Waterway at the Snows Cut bridge in shellfish water. Drainage Area (sq. mi.)

Date Collected	Day	Time & Tide	Mean Daily			pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. lbs/day per 100 ml.
			Discharge cfs	Temp. °C	Color ppm	idity ppm	Phenol. ppm	Total ppm			ppm	Sat. %		
8-25-55	T	1342L	-	30	70	25	0	97	4,400	13,700	6.0	79	0.9	150
9-1-55	Th	0840M	-	26	420	15	0	18	58	80	4.0	49	1.9	2,400
9-14-55	W	0545H	-	23	130	20	0	116	5,800	17,000	6.7	77	1.2	300
Average			-	26	210	20	0	77	3,400	10,000	5.6	68	1.3	950

Station 381

Date Collected	Day	Time & Tide	Mean Daily			pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. lbs/day per 100 ml.
			Discharge cfs	Temp. °C	Color ppm	idity ppm	Phenol. ppm	Total ppm			ppm	Sat. %		
8-10-56	F	1000H	-	27	300	15	0	115	6,800	21,000	6.0	94	0.8	360
8-13-56	M	1055M	-	29	120	10	0	69	4,500	9,200	5.7	80	1.9	930

Station 382 - Located on Inland Waterway at Western mouth of Snows Cut in shellfish water. Samples taken at 15' depth. Drainage Area (sq. mi.)

Date Collected	Day	Time & Tide	Mean Daily			pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chloride ppm	D. O.		5 Day B.O.D. ppm 20°C	M.P.N. lbs/day per 100 ml.
			Discharge cfs	Temp. °C	Color ppm	idity ppm	Phenol. ppm	Total ppm			ppm	Sat. %		
8-2-55	T	1330L	-	31	120	20	0	66	4,200	8,200	6.3	84	1.4	240
9-1-55	Th	0830M	-	26	420	15	0	16	52	110	3.5	43	1.4	240
9-14-55	W	0535H	-	23	360	10	0	100	4,800	14,000	6.9	79	1.1	1,500
Average			-	27	300	15	0	61	3,000	7,400	5.6	69	1.3	660

TABIE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 382-1 - Located on Cape Fear River at Buoy C "33" 0.5 miles below Western mouth of Snows Cut. Drainage Area (sq. mi.)

Date col- lected	Day	Time & Tide	Mean Daily			pH Range	Alkalinity		Hardness as CaCO ₃ ppm	Chlo- ride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. lbs/day per 100 ml.
			Dis- charge cfs	Temp. °C	Color ppm	idity ppm	Phenol. ppm	Total ppm			ppm	% Sat.	ppm 20°C	ppm 25°C	
8-8-56	W	0826H	-	28	260	15	7.8	0	67	4,400	8,000	5.8	79	1.6	930
Station 383 - Located on Cape Fear River at Buoy C "25" below sewage outfall from Carolina Beach and above outfall from Kure Beach. (Avg. of 2 points)															
8-8-55	M	1445L	-	32*	90*	15*	8.0*	0*	86*	6,100*	11,800*	6.4*	86*	1.3*	240*
8-22-55	M	1110H	-	30	360	100	6.9	0	30	1,400	1,500	3.1	40	1.2	430
8-23-55	T	1655L	-	26	580	190	6.7	0	19	34	43	3.4	42	2.0	2,400
8-24-55	W	1300H	-	26	480	45	6.5	0	19	41	48	2.4	29	1.8	1,200
8-25-55	Th	1208H	-	26	500	45	6.2	0	14	45	11	2.0	24	1.4	1,700
8-26-55	F	0845L	-	25	500	35	6.2	0	15	27	24	2.9	35	1.9	4,300
Average			-	27	480	85	6.2 to 8.0	0	19	309	330	2.8	34	1.7	2,000

* Excluded from average because of unseasonable low flow.

TABLE 23

ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 383 - Located on Cape Fear River at Buoy C "25" below sewage outfall from Carolina Beach and above outfall from Kure Beach. (Avg. of 2 points)

Drainage Area (sq. mi.) 9,060

Date Col-lected 1956	Day	Time & Tide	Mean Daily Dis-charge cfs	Temp. °C	Color ppm	Turbidity ppm	pH Range	Alkalinity Phenol. ppm	Alkalinity Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day B.O.D. 20° C ppm	B.O.D. 25° C lbs/day	Coliform M.P.N. per 100 ml.
7-31	T	0900L	-	28	140	15	7.4	0	53	2,100	5,300	5.7	76	2.3	-	1,500
8-1	W	0830L	-	28	100	10	7.6	0	60	2,600	8,000	5.8	79	2.5	-	930
8-1	W	0935L	-	28	120	15	7.3	0	55	2,800	7,000	5.7	77	1.6	-	2,300
8-2	Th	0830L	-	28	90	10	7.7	0	63	3,100	8,800	6.1	85	1.9	-	2,300
8-2	Th	0940L	-	28	120	15	7.0	0	56	3,400	8,300	5.9	81	1.5	-	930
8-3	F	0835M	-	27	80	6	7.0	0	68	3,700	10,000	6.1	84	1.1	-	4,300
8-3	F	0925L	-	27	90	10	6.9	0	59	3,700	8,800	5.9	80	1.1	-	430
8-6	M	0820H	-	27	70	10	7.9	0	92	5,300	15,000	6.2	90	1.4	-	230
8-6	M	0925H	-	28	60	8	7.9	0	88	5,300	14,000	6.4	94	1.9	-	230
8-7	T	0830H	-	28	90	10	8.0	0	90	4,600	12,000	6.0	86	2.9	-	750
8-7	T	0940H	-	28	80	8	7.9	0	91	5,200	14,000	6.3	93	1.6	-	430
8-8	W	0808H	-	28	55	5	7.9	0	83	4,800	12,000	6.0	86	2.1	-	430
8-8	W	0915H	-	28	100	10	7.9	0	111	6,600	11,000	5.9	83	1.3	-	930
Average			-	28	90	10	6.9 to 8.0	0	75	4,100	10,000	6.0	84	1.8	-	1,200

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 384 - Located on Cape Fear River between Snows Marsh and the basin below sewage outfall from Kure Beach and above pollution from Southport. (Avg. of 3 points)															Drainage Area (sq.mi.) 9,090		
Date	Collected	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity ppm	Phenol. ppm	Hardness Tot. as CaCO ₃ ppm	Chloride ppm	D. O. %	Sat. ppm	5 Day B.O.D. ppm 20° C	lbs/day 25° C	Coliform M.P.N. per 100 ml.	
8-8-55	M	1110M	--	31*	130*	15*	8.0*	97*	0*	6,400*	14,000*	6.1*	86*	1.4*	--	170*	
8-18-55	Th	1110L	--	28*	360*	80*	7.6*	76*	0*	3,800*	10,800*	6.1*	81*	1.2*	--	240*	
8-22-55	M	1040H	--	29	360	80	7.1	39	0	2,300	2,300	3.6	46	1.1	--	1,500	
8-23-55	T	1615M	--	27	600	160	6.8	23	0	97	220	3.8	47	2.2	--	6,000	
8-24-55	W	1222H	--	26	520	40	6.6	24	0	900	620	3.2	39	1.6	--	990	
8-25-55	T	1137H	--	26	580	70	6.3	19	0	130	200	2.5	30	1.3	--	15,000	
8-26-55	F	0755L	--	25	460	30	6.3	15	0	110	250	3.1	37	2.0	--	710	
Average			--	27	500	75	6.3 to 8.0	24	0	707	720	3.2	40	1.6	--	4,800	

*Excluded from average because of unseasonable low flow upstream.

Station 384										Drainage Area (sq.mi.) 9,090						
Date	Collected	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity ppm	Phenol. ppm	Hardness Tot. as CaCO ₃ ppm	Chloride ppm	D.O. %	Sat. ppm	5 Day B.O.D. 20° C	ppm lbs/day 25° C	Coliform M.P.N. per 100 ml.
7-31-56	T	0843L	--	28	120	10	7.4	55	0	3,500	6,000	5.9	79	1.6	--	2,300
8-1-56	W	0815L	--	28	80	10	7.6	62	0	3,400	9,000	6.0	83	1.3	--	930
8-1-56	W	0950L	--	27	100	10	7.6	60	0	3,500	8,000	6.1	82	1.0	--	930
8-2-56	Th	0815L	--	28	80	8	7.7	67	0	3,800	8,700	6.3	88	1.2	--	930
8-2-56	Th	0950L	--	28	90	10	7.7	66	0	3,500	9,400	6.1	85	1.3	--	2,300
8-3-56	F	0820M	--	27	90	10	7.3	66	0	3,300	9,000	6.3	85	1.5	--	430
8-3-56	F	0935L	--	27	90	10	7.0	56	0	3,200	8,300	6.2	84	3.6	--	930
8-6-56	M	0810H	--	28	70	10	7.9	92	0	5,500	14,000	6.3	93	1.4	--	230
8-6-56	M	0935H	--	28	50	8	7.9	101	0	6,000	15,000	6.1	90	1.4	--	230
8-7-56	T	0820H	--	28	90	15	7.9	94	0	5,500	13,000	6.0	87	1.8	--	390
8-7-56	T	0955H	--	28	70	10	7.9	97	0	5,200	14,000	6.1	90	1.8	--	930
8-8-56	W	0800H	--	28	90	10	7.9	90	0	5,800	13,000	6.0	87	2.4	--	2,300
8-8-56	W	0925H	--	28	65	15	8.0	90	0	5,000	14,000	6.0	88	1.5	--	430
Average			--	28	85	10	7.0 to 8.0	77	0	4,400	11,000	6.1	86	1.7	--	1,000

MAIN RIVER DRAINAGE AREA

Drainage Area (sq. mi.)

Station 385 - Located on Cape Fear River in channel between Town of Southport and Battery Island and below sewage outfall from Town of Southport.

Date Collected	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total ppm	Hardness as CaCO ₃ ppm	Chloride ppm	D. O. ppm	% Sat.	5 Day ppm	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-8-55	M	1315M	-	31*	42*	7*	8.1*	0*	120*	8,100*	17,600*	6.4*	85*	0.9*	-	2,400*
8-18-55	Th	1315L	-	26	540	100	7.6	0	94	4,300	12,000*	6.3*	77*	1.0*	-	430*
8-22-55	M	1015H	-	29	140	45	7.8	0	82	4,900	9,600	5.8	74	1.0	-	150
8-23-55	T	1525M	-	27	400	35	7.2	0	32	570	1,500	4.7	58	1.1	-	2,400
8-24-55	W	1155H	-	27	200	15	7.5	0	66	2,900	8,300	4.6	57	1.3	-	430
8-25-55	Th	1050M	-	26	280	15	6.7	0	48	2,200	5,600	3.0	37	0.8	-	730
8-26-55	F	0715L	-	25	440	15	6.6	0	32	1,300	3,000	3.2	38	0.9	-	430
Average			-	27	300	25	6.6 to 8.1	0	52	2,400	5,600	4.3	53	1.0	-	830

* Excluded from average because of unseasonable low flow upstream.

Station 385

7-31-56	T	0750L	-	28	90	8	7.8	0	73	3,900	9,000	6.0	83	1.2	-	430
8-1-56	W	0740L	-	27	90	15	7.9	0	83	4,700	13,000	5.9	84	1.3	-	1,500
8-1-56	W	1010L	-	27	90	10	7.8	0	75	4,100	10,000	6.1	84	1.0	-	230
8-2-56	Th	0745M	-	28	55	15	7.9	0	96	5,800	15,000	6.1	90	1.3	-	430
8-2-56	Th	1010L	-	28	80	50	8.0	0	82	4,400	12,000	6.0	86	1.2	-	230
8-3-56	F	0750M	-	27	44	3	7.2	0	88	5,500	14,000	6.0	86	1.1	-	2,300
8-3-56	F	0955L	-	28	90	10	7.1	0	69	4,200	11,000	6.1	86	1.7	-	2,300
8-6-56	M	0745H	-	27	60	15	7.9	0	113	7,100	18,000	6.2	93	1.1	-	230
8-6-56	M	1000M	-	27	42	6	8.0	0	110	6,100	17,000	6.3	94	2.0	-	200
8-7-56	T	0720H	-	28	50	10	8.0	0	111	6,400	17,000	5.9	89	1.6	-	750
8-7-56	T	1020M	-	28	42	8	8.0	0	110	6,200	17,000	6.2	94	2.8	-	430
8-8-56	W	0715M	-	28	60	10	7.9	0	105	7,200	16,000	5.7	85	1.2	-	1,500
8-8-56	W	0955H	-	28	34	5	7.9	0	96	5,800	14,000	6.0	88	1.5	-	430
Average			-	28	65	15	7.1 to 8.0	0	93	5,500	14,000	6.0	88	1.5	-	840

TABIE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 386 - Located in mouth of Inland Waterway below pollution from Southport and Drainage Area (sq. mi.)
East of pollution from fish houses located on Inland Waterway.

Date Col-lected	Day	Time & Tide	Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range		Alkalinity		Hardness ppm	Chlo-ride ppm	D. O.		5 Day B.O.D.		Coliform M.P.N. per 100 ml.
									Phenol. ppm	Total ppm			ppm	% Sat.	ppm 20°C	lbs/day 25°C	
8-31-55	W	0944M	-	27	180	5	6.6	0	0	44	2,700	7,900	4.0	49	1.2	-	4,300
9-12-55	W	1135L	-	25	400	20	6.8	0	0	30	1,100	2,600	4.0	48	0.7	-	9,300
9-26-55	M	1535H	-	25	260	5	7.0	0	0	36	1,600	4,100	5.2	61	1.0	-	2,100
10-25-55	T	1510H	-	19*	90*	10*	7.8*	0*	0*	99*	5,200*	14,000*	6.8*	72*	1.0*	-	930*
Average			-	25	280	10	6.6 to 7.8	0	0	37	1,800	4,900	4.4	53	1.0	-	5,200

*Excluded from average because of unseasonable low flow upstream.

Station 386

7-31-56	T	0745L	-	28	100	15	7.8	0	0	104	6,500	14,000	5.1	75	1.6	-	430
8-1-56	W	0715L	-	28	140	20	7.8	0	0	102	5,700	1,600	6.7	100	1.7	-	2,300
8-1-56	W	1035M	-	27	90	10	7.9	0	0	80	4,300	11,000	6.0	83	1.2	-	2,300
8-2-56	Th	0715M	-	28	85	10	7.9	0	0	105	6,500	17,000	5.4	82	1.3	-	4,300
8-2-56	Th	1030L	-	28	100	15	8.0	0	0	91	5,100	14,000	6.0	88	1.3	-	4,300
8-3-56	F	0715M	-	28	130	15	7.1	0	0	89	5,700	15,000	5.1	75	1.5	-	430
8-3-56	F	1020L	-	28	120	20	6.5	0	0	87	6,100	16,000	4.6	69	2.0	-	4,300
8-6-56	M	0720H	-	27	100	15	7.9	0	0	112	6,700	17,000	6.2	93	1.0	-	4,300
8-6-56	M	1024M	-	28	140	15	7.8	0	0	100	5,300	14,000	5.4	79	2.0	-	1,500
8-7-56	T	0715H	-	28	85	8	8.0	0	0	99	5,600	15,000	5.8	85	1.5	-	2,300
8-7-56	T	1045M	-	28	180	25	7.9	0	0	98	5,200	14,000	5.5	81	1.6	-	2,100
8-8-56	W	0710M	-	28	90	15	7.9	0	0	99	5,600	14,000	6.0	88	1.3	-	930
8-8-56	W	1030H	-	28	49	8	8.0	0	0	112	6,800	17,000	5.8	88	1.3	-	930
Average			-	28	110	15	6.5 to 8.0	0	0	98	5,800	14,000	5.7	84	1.5	-	2,300

TABLE 23

ANALYTICAL RESULTS

MAIN RIVER DRAINAGE AREA

Station 387 - Located on Inland Waterway at Fort Caswell bridge West of Brunswick Navigation Company Fishery and East of Southport Fishery. Also to check intrusion of pollution from Southport into Inland Waterway. Drainage Area (sq. mi.)

Date Col- lected	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Total as CaCO ₃ ppm	Hardness ppm	Chlo- ride ppm	D. C. ppm	% Sat.	5 Day ppm 20°C	B.O.D. lbs/day 25°C	Coliform M.P.N. per 100 ml.
8-31-55	W	0955M	--	27	280	15	6.9	0	56	2,000	6,500	3.4	42	1.1	--	2,400
9-12-55	W	1035L	--	25	540	10	6.8	0	47	1,800	4,700	3.9	46	0.7	--	730
9-26-55	M	1510H	--	24	260	6	7.0	0	28	1,300	2,500	5.3	62	0.8	--	9,300
10-25-55	T	1450H	--	19*	--	--	7.7*	0*	89*	4,300*	12,000*	7.7*	82*	1.1*	--	930*
Average			--	25	360	10	6.8 to 7.7	0	44	1,700	4,600	4.2	50	0.9	--	4,100

* Excluded from average because of unseasonable low flow upstream.

Station 387

7-31-56	T	1030M	--	28	100	15	7.8	0	96	5,800	14,000	5.7	84	1.9	--	750
8-1-56	W	1125M	--	28	70	15	7.8	0	97	5,200	14,000	5.9	87	1.8	--	930
8-2-56	Th	1125L	--	29	60	10	7.9	0	115	6,600	18,000	5.7	89	1.7	--	2,300
8-3-56	F	1055L	--	29	85	10	7.4	0	111	6,200	17,000	5.3	82	1.2	--	4,300
8-6-56	M	1100M	--	29	90	10	7.9	0	116	11,000	18,000	5.5	86	1.5	--	750
8-7-56	T	1120M	--	29	100	10	7.8	0	112	6,400	18,000	5.3	83	2.7	--	1,500
8-8-56	W	1110H	--	29	65	8	8.0	0	104	6,000	16,000	5.1	77	1.6	--	930
Average			--	29	80	10	7.4 to 8.0	0	107	6,700	16,000	5.5	84	1.8	--	1,600

TABLE 23
ANALYTICAL RESULTS
MAIN RIVER DRAINAGE AREA

Station 388 - Located in Cape Fear River at Ft. Caswell 1.3 miles from mouth of river.													Drainage Area (sq.mi.) 9,130	
Date	Day	Time & Tide	Mean Daily Discharge cfs	Temp. °C	Color ppm	Turb. ppm	pH Range	Alkalinity Phenol. ppm	Hardness Total as CaCO ₃ ppm	Chloride ppm	D. O. %	5 Day B.O.D. ppm	lbs/day 25° C	Coliform M.P.N. per 100 ml.
8-8-55	M	1255M	-	31*	55*	7*	8.2*	0*	8,800*	20,700*	6.4*	0.8*	-	23*
8-22-55	M	1000H	-	29	170	45	7.7	0	5,800	9,600	5.8	0.7	-	93
8-23-55	T	1445M	-	28	170	15	7.7	0	3,800	14,700	5.4	2.3	-	2,400
8-24-55	W	1140H	-	27	340	30	7.7	0	5,000	13,200	4.7	1.1	-	430
8-25-55	Th	1035M	-	26	230	10	7.2	0	3,000	8,600	3.3	1.5	-	9,300
8-26-55	F	0653L	-	25	280	10	7.2	0	3,900	7,600	3.6	0.7	-	930
Average			-	27	240	20	7.2 to 8.2	0	4,300	11,000	4.6	1.3	-	2,600

* Excluded from average because of unseasonable low flow upstream.

Station 388													
7-31-56	T	0800L	-	28	100	15	7.9	0	5,000	10,000	5.9	1.4	930
8-1-56	W	0730L	-	27	90	10	8.0	0	5,100	14,000	6.0	1.5	430
8-1-56	W	1025M	-	27	70	8	7.9	0	4,800	12,000	6.0	1.1	430
8-2-56	Th	0725L	-	28	49	8	8.0	0	6,600	17,000	5.9	1.4	930
8-2-56	Th	1020L	-	28	80	10	8.0	0	4,900	14,000	6.1	0.9	430
8-3-56	F	0735M	-	27	42	8	7.2	0	5,900	16,000	5.7	0.8	2,300
8-3-56	F	1005L	-	28	95	45	7.5	0	4,800	13,000	5.9	1.2	930
8-6-56	M	0735H	-	27	60	10	8.0	0	6,000	19,000	6.2	0.7	150
8-6-56	M	1008M	-	27	60	15	8.0	0	6,600	17,000	6.3	1.3	430
8-7-56	T	0740H	-	28	39	6	8.0	0	6,100	17,000	6.0	1.6	430
8-7-56	T	1030M	-	28	60	10	7.9	0	6,600	18,000	6.1	1.6	2,300
8-8-56	W	0728H	-	28	50	10	7.8	0	6,000	16,000	5.8	1.1	230
8-8-56	W	1005H	-	28	31	6	8.0	0	6,400	18,000	6.2	1.2	93
Average			-	28	65	10	7.2 to 8.0	0	5,800	15,000	6.0	1.2	770

STATION 389
SURF CITY BEACH

1

2

3

Pier

<u>Date</u>	<u>Time & Tide</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>
8-29-55	1330L	23	3.6	23
10-3-55	1300L	2,400	240	150
10-6-55	1100H	93	93	240

STATION 390
NEW TOPSAIL BEACH

1

2

3

Pier

<u>Date</u>	<u>Time & Tide</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5</u>	<u>#6</u>
8-29-55	1350L	4.3	<3.6	3	<3.6	<3.6	3.6
10-3-55	1320L	300	430	930	43	93	9.1
10-6-55	1115H	430	240	240	240	240	93

4

5

6

All Distances Between Stations
Approximately 300'

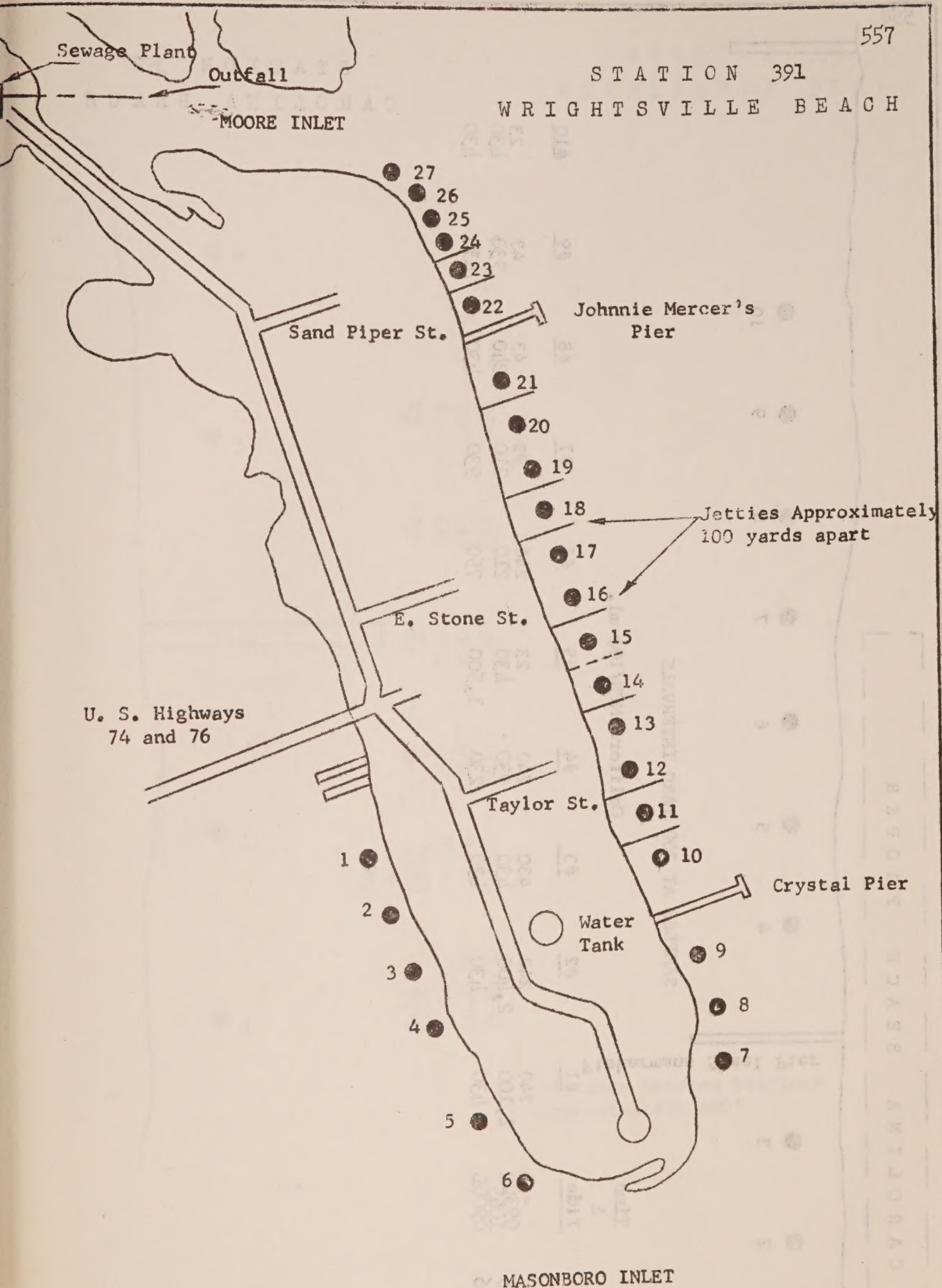
STATION 391
WRIGHTSVILLE BEACH
ANALYTICAL RESULTS

Date	Time & Tide	#1	#2	#3	#4	#5	#6	#7	#8	#9
9-2-55	0700H	240	240	240	240	240	240	93	240	93
9-8-55	0800H	430	240	240	23	93	21	3.6	23	240
10-3-55	0930H	93	93	93	210	15	240	-	-	-
10-4-55	1045	-	-	-	-	-	-	30	43	4,300
7-26-56	1515L	-	-	-	-	-	-	430	430	930
	1500L	-	-	-	-	-	-			
	1650L	-	-	-	-	-	-			
	1200M	-	-	-	-	-	-			

Date	Time & Tide	#10	#11	#12	#13	#14	#15	#16	#17	#18
9-2-55	0700H	930	930	93	930	93	240	23	43	43
9-8-55	0800H	23	11	23	15	15	93	23	73	23
10-3-55	0930H	-	-	-	-	-	-	-	-	-
10-4-55	1045	2,400	430	430	9,300	430	2,400	930	930	430
7-26-56	1515L	230	150	930	1,500	9,300	750	430	2,300	930
	1500L									
	1650L									
	1200M									

Date	Time & Tide	#19	#20	#21	#22	#23	#24	#25	#26	#27
9-2-55	0700H	210	930	430	730	930	930	430	93	240
9-8-55	0800H	23	9.1	43	21	73	43	7.3	3.6	3.6
10-3-55	0930H	-	-	-	-	-	-	-	-	-
10-4-55	1045	930	2,400	2,400	930	9,300	930	9,300	4,300	4,300
7-26-56	1515L	2,300	230	230	930	430	230	230	930	>240,000*
	1500L									
	1650L									
	1200M									

*Excluded from average - indeterminate.



STATION 392
CAROLINA BEACH

CAROLINA BEACH PROPER

Date	Time & Tide	SAMPLES AT 200 YARD INTERVALS									
		Coliform MPN/100 ml.									
		#1	#2	#3	#4	#5	#6	#7	#8	#9	#10
9-5-55	0930H	240	240	430	240	23	240	93	43	43	23
10-5-55	1045	2,100	2,400	430	930	430	210	210	240	930	430
7-26-56	0900L	430	430	430	230	1,500	750	930	430	430	430

Fishermans Steel Pier

SAMPLES AT 200 YARD INTERVALS

Coliform MPN/100 ml.

Time & Tide

Date

#1

#2

#3

#4

#5

#6

#7

#8

#9

#10

10

9

8

7

6

5

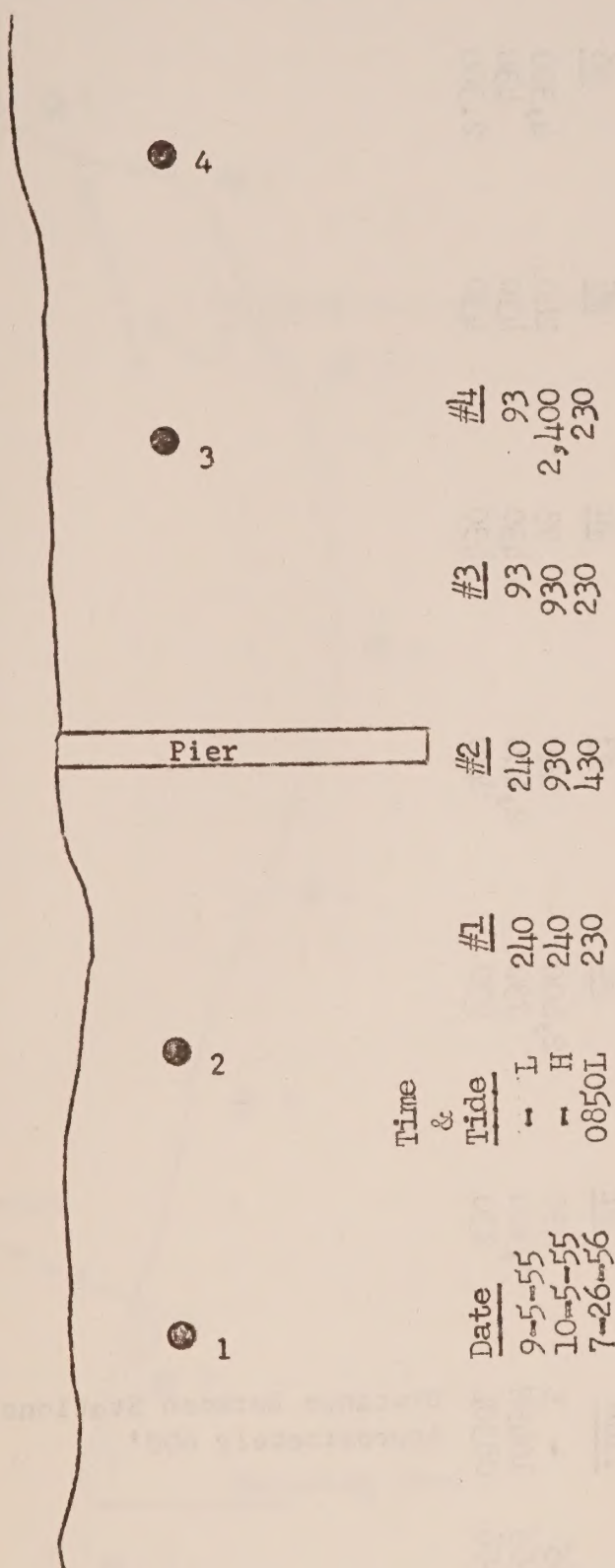
4

3

2

1

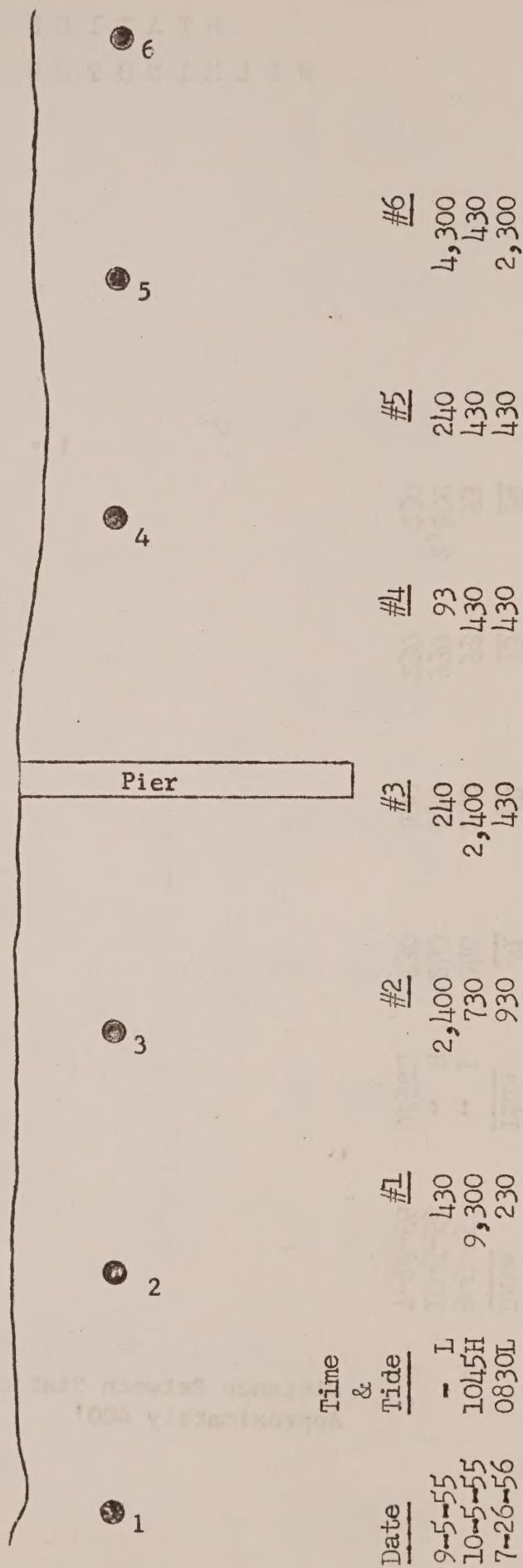
STATION 393
WILMINGTON BEACH



Distance Between Stations
Approximately 400'

STATION 394

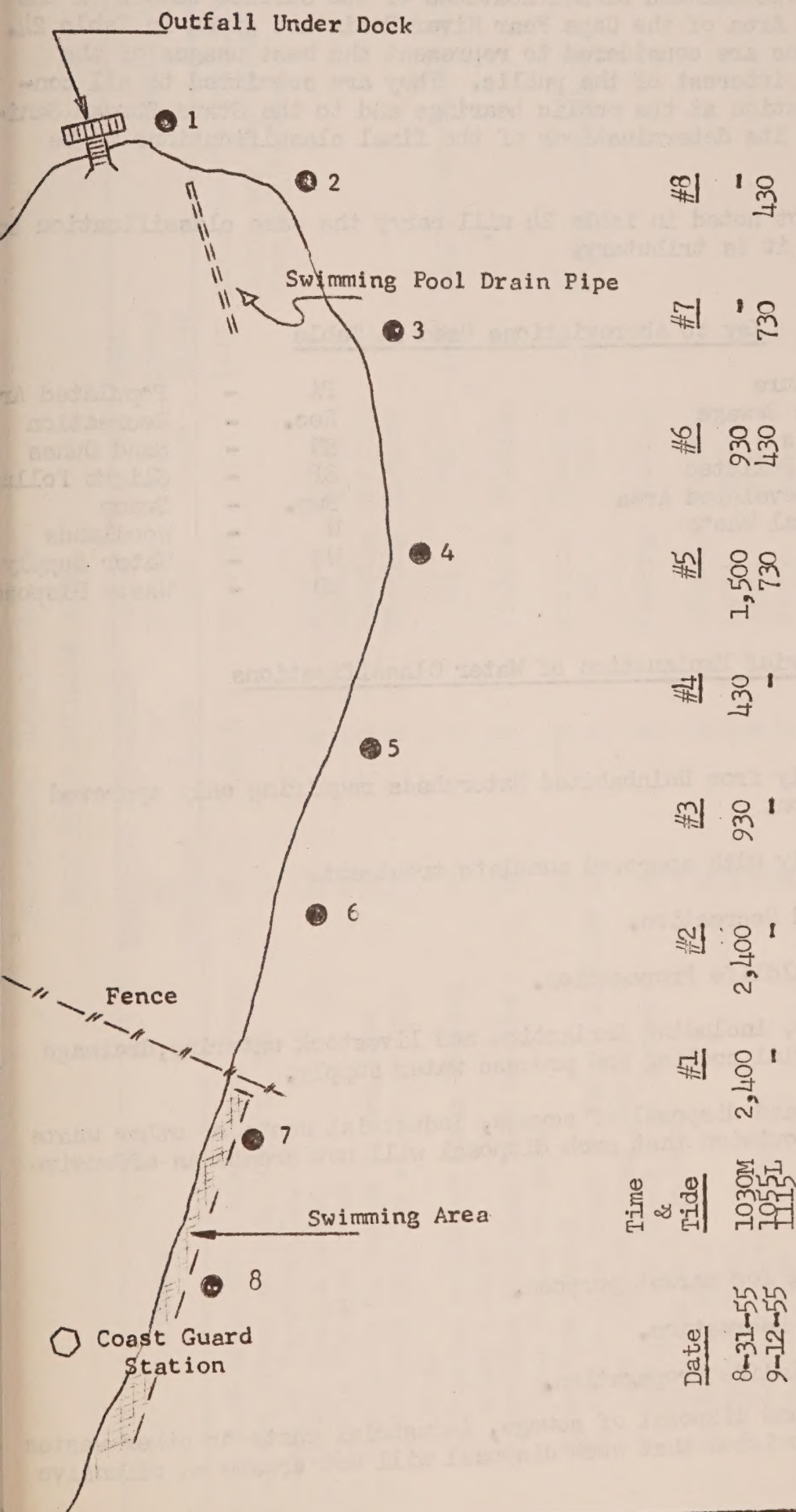
KURE BEACH



Distance Between Stations
Approximately 400'

STATION 395

FORT CASWELL BEACH



EXPLANATION OF TABLE 24, RECOMMENDED CLASSIFICATIONS

The tentative recommended classifications of the surface waters of the Main River Drainage Area of the Cape Fear River Basin are given in Table 24. These recommendations are considered to represent the best usages of the streams in the best interest of the public. They are submitted to all concerned for consideration at the public hearings and to the State Stream Sanitation Committee in its determinations of the final classifications to be assigned.

* Any stream not noted in Table 24 will carry the same classification as the stream to which it is tributary.

Key to Abbreviations Used in Table

Agri.	-	Agriculture	PA	-	Populated Area
DS	-	Domestic Sewage	Rec.	-	Recreation
F	-	Farmlands	SD	-	Sand Dunes
GP	-	Grossly Polluted	SP	-	Slight Pollution
HDA	-	Highly Developed Area	Swp.	-	Swamp
IW	-	Industrial Waste	W	-	Woodlands
N	-	Natural	WS	-	Water Supply
P	-	Polluted	WD	-	Waste Disposal

Brief Explanation of Water Classifications

Fresh Surface Waters

- A-I - Water supply from Uninhabited Watersheds requiring only approved disinfection.
- A-II - Water supply with approved complete treatment.
- B - Bathing and Recreation.
- C - Fish and Wildlife Propagation.
- D - Agriculture, including irrigation and livestock watering, drainage and industrial cooling and process water supply.
- E - Navigation and disposal of sewage, industrial waste or other waste with the provision that such disposal will not create an offensive condition.

Tidal Salt Waters

- SA - Shellfishing for market purpose.
- SB - Bathing and Recreation.
- SC - Fish and Wildlife Propagation.
- SD - Navigation and disposal of sewage, industrial waste or other wastes with the provision that such disposal will not create an offensive condition.

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
I. Cape Fear River from junction of Deep and Haw Rivers to U.S. Highway 301 Bridge at Fayetteville. **	WF	SP & N	WS & WD	WS	A-II	Water Supply for Lillington, Dunn, and Fayetteville D.S. from Lillington.
A. Lonnie Womble Creek	WF	N	Agri.	Agri.	D	
B. Little Shaddox Creek	WF	N	Agri.	Agri.	D	
C. Lick Creek to Dam at Olhams Lake	WF	N	Bathing	Bathing	B	
D. Lick Creek from Dam at Olhams Lake to Mouth	WF	N	Fishing	Fishing	C	
1. Unnamed tributary above Sanford water intake	WF	N	WS	WS	A-II	Sanford Watershed
2. Unnamed tributary from Sanford water intake to mouth	WF	N	Fishing	Fishing	C	
3. Wallace Branch	WF	N	Fishing	Fishing	C	
4. Little Lick Creek to Dam at Williams Lake (Sanford Water Supply)	WF	N	WS	WS	A-II	Sanford Watershed
5. Little Lick Creek from Dam at Williams Lake to mouth	WF	N	Fishing	Fishing	C	
6. Stoney Creek	WF	N	Fishing	Fishing	C	
7. Hughes Creek	WF	N	Agri.	Agri.	D	
a. Copper Mine Creek	WF	N	Agri.	Agri.	D	
b. Gum Fork	WF	N	Agri.	Agri.	D	
c. Roberts Creek	WF	N	Agri.	Agri.	D	
Bush Creek	WF	N	Fishing	Fishing	C	
Buckhorn Creek	WF	N	Agri.	Agri.	D	
1. Jim Branch	WF	N	Agri.	Agri.	D	
2. Cary Branch	WF	N	Fishing	Fishing	C	
3. Whiteoak Creek	WF	N	Agri.	Agri.	D	
a. Little Branch	WF	N	Agri.	Agri.	D	
b. Little Whiteoak Creek	WF	N	Agri.	Agri.	D	
(1) Thomas Creek	WF	N	Agri.	Agri.	D	
c. Tom Jacks Creek	WF	N	Agri.	Agri.	D	

** tributaries to segments of Cape Fear River which are classified A-II will carry the classification D unless otherwise noted.

TABLE NO. 24

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
G. Fall Creek	WF	N	Agri.	Agri.	D	
H. Parkers Creek	WF	N	Fishing	Fishing	C	
I. Daniels Creek to Dam at Watsons Lake	PA	N	Bathing	Bathing	B	
J. Daniels Creek from Dan at Watsons Lake to mouth	WF	N	Agri.	Agri.	D	
K. Cedar Creek	WF	N	Agri.	Agri.	D	
L. Camels Creek	WF	N	Agri.	Agri.	D	
M. Avents Creek	WF	N	Agri.	Agri.	D	
N. Fish Creek	WF	N	Agri.	Agri.	D	
O. Hectors Creek	WF	N	Fishing	Fishing	C	
P. Neils Creek	WF	N	Fishing	Fishing	C	
1. Kenneth Creek	WF	N	Agri.	Agri.	D	Effluent from Fuquay Springs Sewage Plant
a. Kenneth Branch	WF	P	WD	Agri.	D	
Q. Dry Creek	WF	N	Agri.	Agri.	D	
R. Buies Creek	WF	N	WD	Agri.	D	Effluent from Campbell College Buies Creek Sewage Plant
1. East Buies Creek	WF	N	Agri.	Agri.	D	
2. West Buies Creek	WF	N	Agri.	Agri.	D	
S. Thorntons Creek	WF	N	Fishing	Fishing	C	
T. Upper Little River to N.C. Hwy. 210 Bridge	WF	N	Agri.	Agri.	D	
1. White Horse Branch	WF	N	Agri.	Agri.	D	
2. Little Juniper Creek	WF	N	Fishing	Fishing	C	
a. Mulatto Branch	WF	N	Agri.	Agri.	D	
3. Popular Branch	WF	N	Agri.	Agri.	D	
4. Gastars Creek	WF	N	Agri.	Agri.	D	Effluent from new Jonesboro Sewage Treatment Plant
a. Unnamed tributary	WF	P	WD	Agri.	D	Effluent from old Jonesboro sewage plant

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District		Condition of Waters	Chief Present Usage		Best Usage	Proposed Class	Comments
	District			Usage				
5. Juniper Creek	WF		N	Fishing		Fishing	C	Morris Pond
a. Mare Branch	WF		N	Fishing		Fishing	C	
b. Thorofare Branch	WF		N	Fishing		Fishing	C	
(1) Run Branch	WF		N	Fishing		Fishing	C	
(2) Reedy Branch	WF		N	Fishing		Fishing	C	
6. Carrs Creek	WF		N	Agri.		Agri.	D	
7. Patchet Creek	WF		N	Agri.		Agri.	D	
8. Barbecue Swamp	WF		N	Agri.		Agri.	D	
a. Big Branch	WF		N	Agri.		Agri.	D	
U. Upper Little River from N.C. Hwy. 210 Bridge to mouth	WF		N	Fishing		Fishing	C	
1. McLean Creek	WF		N	Agri.		Agri.	D	I.W. from Moores Dairy, D.S. &
Stuarts Creek (Juniper Creek)	WF		P	Agri.		Agri.	D	I.W. from Erwin and Erwin Mills
W. Beaverdam Swamp Canal	WF		N	Agri.		Agri.	D	
Lower Little River to Moore County Line	WF		N	Fishing		Fishing	C	
1. Wads Creek	WF		N	Fishing		Fishing	C	
2. Nicks Creek	WF		N	Fishing		Fishing	C	
a. Joes Ford	WF		N	Agri.		Agri.	D	
(1) Board Branch	WF		P	WD		Agri.	D	Effluent from Pinehurst Sewage Plant
(2) Rattlesnake Creek	WF		N	WS		WS	A-II	Intakes for Pinehurst Water Supply
b. Juniper Branch	WF		N	WS		WS	A-II	Intake for Pinehurst Water Supply
c. Unnamed tributary	W		N	Agri.		Agri.	D	
3. McLean Branch	WF		N	Fishing		Fishing	C	Backwater to Thaggards Pond
4. Ponds Branch	WF		N	Fishing		Fishing	C	
5. Mill Creek to dam at Southern Pines Water Supply Intake	WF		N	WS		WS	A-II	Watershed for Southern Pines

TABLE NO. 24
RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
6. Mill Creek from dam at Southern Pines Water Supply Intake to mouth of McDeeds Creek	WF	N	Agri.	Agri.	D	
7. Mill Creek from mouth of McDeeds Creek to dam at Crystal Lake	W & PA	N	Bathing	Bathing	B	Lakeview Resort Area
a. McDeeds Creek	WF & PA	N-SP	WD	WD	D	Effluent from Southern Pines Sewage Plant
(1) Unnamed tributary (Swann Lake)	PA	N	Bathing	Bathing	B	
8. Mill Creek from dam at Crystal Lake to mouth	WF	N	Agri.	Agri.	D	
Y. Lower Little River from Moore Co. Line to downstream water intake for Fort Bragg	W	N	WS	WS	A-II	Fort Bragg Watershed
1. James Creek	W	N	WS	WS	A-II	"
a. Mill Creek	WF	N	WS	WS	A-II	"
b. Silver Run	W	N	WS	WS	A-II	"
c. Carrolls Branch	WF	N	WS	WS	A-II	"
d. Tuckamoc Creek	W	N	WS	WS	A-II	"
(1) Polecat Creek	W	N	WS	WS	A-II	"
2. Flat Creek	W	N	WS	WS	A-II	"
3. Crains Creek to Moore County Line	WF	N	Agri.	Agri.	D	
a. Dunham Creek to Dam at Carthage's No. 1 Water Reservoir	WF	N	WS	WS	A-II	No. 1 Water Supply Reservoir for Town of Carthage (spring fed)
b. Dunham Creek from Dam at Carthage's No. 1 Water Reservoir to mouth	WF	N	Agri.	Agri.	D	
c. Herds Creek	WF	N	Agri.	Agri.	D	
d. White Oak Creek	WF	N	Agri.	Agri.	D	
4. Crains Creek from Moore County Line to mouth	W	N	WS	WS	A-II	Fort Bragg Watershed

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of		Condition of Waters	Chief Present		Proposed Class	Comments
	District	Usage		Usage	Usage		
a. Beaver Creek	WF		N	WS	A-II	Fort Bragg Watershed	
b. Cypress Creek	W		N	WS	A-II	"	
c. Little Creek	W		N	WS	A-II	"	
5. Deep Creek	W		N	WS	A-II	"	
a. Mill Creek	W		N	WS	A-II	"	
6. Buffalo Creek	W		N	WS	A-II	"	
7. Turkey Creek	W		N	WS	A-II	"	
8. Jumping Run	W		N	WS	A-II	"	
9. Hector Creek	W		N	WS	A-II	"	
10. Little Creek	W		N	WS	A-II	"	
11. Cypress Creek	W		N	WS	A-II	"	
12. McPherson Creek	W		N	WS	A-II	"	
7. Lower Little River from downstream water intake for Fort Bragg to mouth	WF		N-SP	WD	D	Effluent from Fort Bragg Sewage Plant	
1. Muddy Creek	WF		N	Agri.	D	Effluent from septic tank at Brooks Trailer Camp and storm drainage from runways at Pope AFB	
2. McDuffie Creek (Tank Creek)	W & P4		P	WD	D	Effluent from Spring Lake Sewage Plant	
3. Unnamed tributary near Spring Lake	W		GP	WD	D		
4. Gibson Creek	WF		N	Agri.	D		
5. McLeod Creek	WF		N	Agri.	D		
6. Anderson Creek	WF		N	Fishing	C		
7. Stewarts Creek	WF		N	Agri.	D		
Carvers Creek	WF		N	Agri.	D		
1. Falls Creek	WF		N	Agri.	D		
II. Cape Fear River from U.S. Hwy. 301 Bridge Fayetteville to U.S. Corps of Engineers dock No. 2 at Elizabethtown	WF		N	Fishing	C	D.S. & I.W. from Fayetteville and various industrial outfalls	

TABLE NO. 24
RECOMMENDED CLASSIFICATIONS
MAIN RIVER DRAINAGE AREA

Stream*	Character of		Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
	District	W & PA					
A. Cross Creek to Langdon Street Water Supply dam in Fayetteville		W & PA	N	WS	WS	A-II	Auxiliary Water Supply for Fayetteville
1. Unnamed tributary to Dam at Country Club Lake		WF	N	Bathing	Bathing	B	Site of Camp Osceola
2. Unnamed tributary from dam at Country Club Lake to mouth		PA	N	WS	WS	A-II	Auxiliary Water Supply for Fayetteville
B. Cross Creek from Langdon Street Water Supply dam in Fayetteville to mouth		PA	P	WD	Drainage	D	Storm drainage from Fayetteville and raw D.S. & I.W. from Fayetteville
1. Little Cross Creek to Water Supply dam at Glenville Lake		PA	N	WS	WS	A-II	Fayetteville Watershed
2. Little Cross Creek from Water Supply dam at Glenville Lake to mouth		PA	SP	Drainage	Drainage	D	Storm Drainage from Fayetteville and Local Contamination
3. Blounts Creek		PA	SP	Drainage	Drainage	D	"
a. Branson Creek		F & PA	SP	Drainage	Drainage	D	"
(1) Hybarts Branch		F & PA	P	WD	Agri.	D	Raw I.W. from Sycamore Dairy
Locks Creek		WF & PA	SP	Agri.	Agri.	D	Local Contamination
1. Gum Log Canal		WF	N	Agri.	Agri.	D	
2. Reece Creek		WF	N	Agri.	Agri.	D	
3. Buzzard Branch		PA	SP	WD	Agri.	D	I.W. from McDaniels Abattoir
Atkinson Canal		PA	P	WD	Drainage	D	Raw I.W. from Holt-Williamson Mfg. Co. & Raw D.S. from Fayetteville
Unnamed tributary		F	GP	WD	Agri.	D	Raw I.W. from Underwood Poultry Co.
McPices Creek		WF	N	Agri.	Agri.	D	
Rockfish Creek to mouth of Puppy Creek.		WF	N	Agri.	Agri.	D	
1. Jennie Creek		W	N	Drainage	Drainage	D	On Fort Bragg Reservation
2. Wolf Pit Creek		W	N	Drainage	Drainage	D	"
3. Piney Bottom Creek		W	N	Drainage	Drainage	D	"
4. Calf Branch		W	N	Drainage	Drainage	D	"

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
5. Gum Branch	W	N	Drainage	Drainage	D	On Fort Bragg Reservation
6. Field Branch	W	N	Drainage	Drainage	D	"
7. Cabin Branch	W	N	Drainage	Drainage	D	"
8. Juniper Creek	W	N	Drainage	Drainage	D	"
9. Mill Creek	WF	N	Agri.	Agri.	D	"
10. Dry Branch	WF	N	Agri.	Agri.	D	On Fort Bragg Reservation
11. Nicholson Creek	WF	N	Agri.	Agri.	D	Local Contamination and former
12. Pedlers Branch	WF & PA	SP	Agri.	Agri.	D	effluent from sewage treatment plant at Raeford
13. Beaver Creek	WF	N	Agri.	Agri.	D	Partially on Fort Bragg
14. a. Black Creek	WF	N	Agri.	Agri.	D	Reservation
14. b. Puppy Creek	WF	N	Agri.	Agri.	D	On Fort Bragg Reservation
14. c. Black Creek	W	N	Drainage	Drainage	D	"
14. d. Rays Mill Creek	W	N	Drainage	Drainage	D	"
14. e. (1) Bull Branch	W	N	Drainage	Drainage	D	"
14. f. Patterson Creek	W	N	Drainage	Drainage	D	"
14. g. McDuffie Creek	W	N	Drainage	Drainage	D	"
14. h. (1) Trap Branch	W	N	Drainage	Drainage	D	"
H. Rockfish Creek from mouth of Puppy Creek to mouth	WF	N	Fishing	Fishing	C	
1. Stewarts Creek	WF	N	Fishing	Fishing	C	
2. Unnamed tributary to dam at Permastone Lake	WF	N	Bathing	Bathing	B	
3. Unnamed tributary from dam at Permastone Lake to mouth	WF	N	Agri.	Agri.	D	
4. Little Rockfish Creek to mouth of Bones Creek	WF	N	Agri.	Agri.	D	
a. Bones Creek to U.S. Hwy. 401	WF	N	Fishing	Fishing	C	Fayetteville Fish Hatchery
b. Bones Creek from U.S. Hwy. 401 to mouth	WF	N	Agri.	Agri.	D	

TABLE NO. 24

RECOMMENDED CLASSIFICATIONS
MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
5. Little Rockfish Creek from mouth of Bones Creek to dam at Lakewood Lake	WF	N	Bathing	Bathing	B	
6. Little Rockfish Creek from dam at Lakewood Lake to mouth	W	N	Agri.	Agri.	D	Effluent from Hope Mills Sewage Treatment Plant
a. Beaver Creek to Hwy. Crossing at Cumberland, N. C.	WF & PA	N	Fishing	Fishing	C	
(1) Big Branch	WF	N	Fishing	Fishing	C	
(2) Jacks Ford Branch	WF	GP	Fishing WD	Fishing Agri.	D	Effluent from Bonnie Doone Sewage Plant
(3) Stewarts Creek	WF	N	Fishing	Fishing	C	
b. Beaver Creek from Hwy. Crossing at Cumberland, N. C. to mouth	WF	SP	Agri.	Agri.	D	Effluent from Cumberland Sewage Plant
c. Buckhead Creek	WF	N	Agri.	Agri.	D	I. W. from Vander
I. Unnamed Tributary	WF	N-SP	WD	Agri.	D	
J. Cedar Creek	WF	N	Fishing	Fishing	C	
K. Alligator Creek	WF	N	Agri.	Agri.	D	
L. Harris Mill Creek	WF	N	Agri.	Agri.	D	
M. Grays Creek to N. C. Hwy. #87	W	N	Bathing	Bathing	B	Rainbow Lake
N. Grays Creek from N. C. Hwy. #87 to mouth	WF	N	Agri.	Agri.	D	
O. Willis Creek	WF	N	Agri.	Agri.	D	
1. Unnamed Tributary to Dam at McGrougans Lake	WF	N	Bathing	Bathing	B	
2. Unnamed Tributary from Dam at McGrougans Lake to Mouth	WF	N	Agri.	Agri.	D	
P. Prospect Hall Creek	WF	N	Agri.	Agri.	D	
1. Unnamed Tributary to dam at Pages Lake	W	N	Bathing	Bathing	B	
2. Unnamed Tributary from dam at Pages Lake to Mouth	WF	N	Agri.	Agri.	D	
Q. Phillips Creek	WF	N	Fishing	Fishing	C	

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
R. Harrison Creek	WF	N	Agri.	Agri.	D	
1. Indian Creek	WF	N	Agri.	Agri.	D	
III. Cape Fear River from U.S. Corps of Engineers Lock #2 at Elizabethtown to raw Water Supply Intake at Riegel Paper Corp.**	WF	N	WD & WS	WS	A-II	Domestic sewa go from Elizabeth town and watershed for Riegel Paper Corporation and City of Wilmington.
A. Ellis Creek	WF	N	Agri.	Agri.	D	
1. Suggs Mill Pond	WF	N	Fishing	Fishing	C	
2. McCall Swamp	WF	N	Agri.	Agri.	D	
3. Lake Drain (Little Singletary Lake)	WF	N	Agri.	Agri.	D	
a. Little Singletary Lake	WF	N	Fishing	Fishing	C	
4. Lake Drain (Salters Lake)	WF	N	Agri.	Agri.	D	
a. Salters Lake	WF	N	Fishing	Fishing	C	
B. Browns Creek	WF	P	WD	Agri.	D	I.W. from Butler Market Abattoir and Bladen Slaughterhouse at Elizabethtown.
C. Turnbull Creek	WF	N	Fishing	Fishing	C	
1. Little Turnbull Creek	WF	N	Fishing	Fishing	C	
2. Thumb Swamp	WF	N	Fishing	Fishing	C	
3. Lake Drain (Jones Lake)	W	N	Agri.	Agri.	D	
a. Jones Lake	W	N	Bathing	Bathing	B	Jones Lake State Park
4. Lake Drain (White Lake)	W	N	Agri.	Agri.	D	
a. White Lake	N	N	Bathing	Bathing	B	Recreational Area
D. Hammond Creek	WF	N	Fishing	Fishing	C	
1. Whites Creek	WF	N	Fishing	Fishing	C	
E. Lucas Creek	WF	N	Fishing	Fishing	C	
F. Donahue Creek	WF	N	Fishing	Fishing	C	
G. Frenches Creek	WF	N	Fishing	Fishing	C	
H. Carvers Creek	WF	N	Fishing	Fishing	C	
I. Natmore Creek (Whiteoak Swamp)	WF	N	Fishing	Fishing	C	

** All tributaries to the segments of the Cape Fear River which are classified "A-II" will carry the classification "D" unless otherwise noted.

TABLE NO. 24

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
J. Waymans Creek	WF	N	Fishing	Fishing	C	
IV. Cape Fear River from raw water supply intake at Riegel Paper Corp. to upstream mouth of Toomers Creek	W	PN	WD-Fishing	Fishing	C-Swp.	Commercial Fishing Water, I.W. Riegel Paper Corp. and Fertilizer Plants, Cooling water for C.P. & L. Co. Sutton Steam Plant.
A. Livingston Creek to Seaboard Railroad Bridge.	WF	N	Fishing	Fishing	C-Swp.	
1. Dans Creek	WF	N	Fishing	Fishing	C-Swp.	
a. Big Branch	WF	N	Fishing	Fishing	C-Swp.	
2. All connecting drainage canals	WF	N	Agri.	Agri.	D	
B. Livingston Creek from Seaboard Railroad Bridge to mouth	W-Swp.	N	Agri.	Agri.	D	
1. Mill Creek	W	SP	WD	Agri. & WD	D	I. W. Acme Fertilizer Co.
C. Northwest Creek (Big Branch)	WF & Swp.	GP	WD	Agri.	D	"
D. Hood Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
E. Black River	WF & Swp.	N	Fishing	Fishing	C-Swp.	
1. Coharie Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. Great Coharie Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
(1) Beaverdam Swamp	WF & Swp.	N	Agri.	Agri.	D	
(2) Kill Swamp	WF & Swp.	N	Agri.	Agri.	D	
(3) Sevenmile Swamp	WF & Swp.	N	Agri.	Agri.	D	
(4) Ward Swamp	WF & Swp.	N	Agri.	Agri.	D	
(a) Craddock Swamp	WF & Swp.	N	Agri.	Agri.	D	
(5) Merkle Swamp	WF & Swp.	N	Agri.	Agri.	D	
(a) McPhail Branch	WF & Swp.	N	Agri.	Agri.	D	
(6) Old Mill Swamp	WF & Swp.	N	Agri.	Agri.	D	
(7) Marsh Swamp	WF & Swp.	N	Agri.	Agri.	D	
(8) Beaverdam Swamp	WF & Swp.	N	Agri.	Agri.	D	
(9) Meeting House Branch	WF & Swp.	N	Agri.	Agri.	D	

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
(10) Mill Branch	WF & PA	P	WD	Agri.	D	Raw D.S. & I.W. from Clinton
(a) Rat Tail Branch	PA	N	Drainage	Drainage	D	
(b) Dollar Branch	PA	SP	Drainage	Drainage	D	Storm Drainage from Clinton
(11) Whiteoak Swamp	WF & Swp.	N	Agri.	Agri.	D	
b. Little Coharie Creek	WF & Swp.	N	WD-Fishing	Fishing	C-Swp.	Raw D.S. from Salemburg and effluent from one Roseboro sewage plant
(1) Cong Branch	WF & Swp.	N	Agri.	Agri.	D	
(2) Oppossum Swamp	W & Swp.	N	Agri.	Agri.	D	
(3) Horner Swamp	WF & Swp.	N	Agri.	Agri.	D	
(4) Caesar Swamp to Dam at Williams Lake	W & Swp.	N	Bathing	Bathing	B	
(5) Caesar Swamp from Dam at Williams Lake to mouth	WF & Swp.	N	Agri.	Agri.	D	
(a) Twomile Swamp	WF & Swp.	N	Agri.	Agri.	D	
(6) Mill Swamp	WF & Swp.	N	Agri.	Agri.	D	
(7) Rye Swamp to Dam at Laurel Lake	W & Swp.	N	Bathing	Bathing	B	
(8) Rye Swamp from Dam at Laurel Lake to mouth	W & Swp.	N	Agri.	Agri.	D	
(9) Bearskin Creek	WF & Swp.	N	Agri.	Agri.	D	
2. Six Run	WF & Swp.	N	Agri.	Fishing	C-Swp.	
a. Hoe Swamp	WF & Swp.	N	Fishing	Fishing	D	
b. Mill Swamp	WF & Swp.	N	Agri.	Agri.	D	
c. Gilmore Swamp	WF & Swp.	N	Agri.	Agri.	D	
d. Termile Swamp	WF & Swp.	N	Agri.	Agri.	D	
e. Beaverdam Swamp	WF & Swp.	N	Agri.	Agri.	D	
f. Turkey Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
g. Stewarts Creek	WF & Swp.	N-SP	WD-Agri.	Agri.	D	Effluent from Warsaw Sewage Plant.
(1) Millers Creek	WF & Swp.	N	Agri.	Agri.	D	
(a) Unnamed Tributary	F & Swp.	P	WD	Agri.	D	Effluent from Magnolia Sewage Plant.

TABLE NO. 24
RECOMMENDED CLASSIFICATIONS
MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
h. Cawwifle Swamp	WF & Swp.	N	Agri.	Agri.	D	
i. Crane Creek	WF	N	Agri.	Agri.	D	
3. Clear Run Swamp	WF & Swp.	N	Agri.	Agri.	D	
4. Big Branch	WF	N	Agri.	Agri.	D	
5. Canty Mill Creek	WF	N	Agri.	Agri.	D	
a. Cobb Branch	WF	N	Agri.	Agri.	D	
6. Wildcat Swamp	WF & Swp.	N	Agri.	Agri.	D	
7. Keith Branch	WF	N	Agri.	Agri.	D	
8. South River	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. Black River to Barclaysville Road south of Angier	WF	SP	WD-Fishing	Fishing	C-Swp.	Effluent from Angier Sewage Plant
b. Black River from Barclaysville Road south of Angier to confluence with Mingo Swamp	WF	SP	Agri.	Agri.	D	Effluent from Dunn's Black River Sewage Plant
c. Mingo Swamp	WF & Swp.	SP	WD-Agri.	Agri.	C-Swp.	Effluent from one of Dunn's Sewage Plants
(1) Stoney Run to Dam at Hanna's Pond	WF & Swp.	SP	WD-Fishing	Fishing	C-Swp.	I.W. from Wellons Candy Co.
(2) Stoney Run from Dam at Hanna's Pond to mouth	WF	SP	WD-Agri.	Agri.	D	I.W. from M.F. Hodge Abattoir
(3) Beaver Swamp	WF & Swp.	N	Agri.	Agri.	D	
d. Little Beaverdam Creek	WF	N	Agri.	Agri.	D	
e. Jones Creek	WF & Swp.	N	Agri.	Agri.	D	
f. Big Creek	WF & Swp.	N	Agri.	Agri.	D	
(1) Brown Swamp	WF & Swp.	N	Agri.	Agri.	D	
g. Big Swamp	WF & Swp.	N	Agri.	Agri.	D	
h. Mill Creek	WF & Swp.	N	WD	Agri.	D	Effluent from one of Roseboro's Sewage Plants
i. Beaverdam Creek	WF & Swp.	N	Agri.	Agri.	D	
j. Peters Creek	WF & Swp.	N	Agri.	Agri.	D	

TABLE NO. 24

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
k. Cyprus Creek	WF & Swp.	N	Agri.	Agri.	D	
l. Smith Mill Pond Run	WF & Swp.	N	Agri.	Agri.	D	
(1) Smiths Mill Pond	W & Swp.	N	Fishing	Fishing	C-Swp.	
m. Tomahawk Creek	WF & Swp.	N	Agri.	Agri.	D	
n. Enock Mill Creek	WF & Swp.	N	Agri.	Agri.	D	
o. Rowan Creek	WF & Swp.	N	Agri.	Agri.	D	
p. Lake Creek (Black Lake)	WF & Swp.	N	Agri.	Agri.	D	
(1) Black Lake	WF & Swp.	N	Fishing	Fishing	C-Swp.	
9. Hawes Mill Creek	W & Swp.	N	Agri.	Agri.	D	
10. Colvins Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
11. Colly Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. Lake Drain (Black Lake)	WF & Swp.	N	Agri.	Agri.	D	
b. Little Colly Creek	WF & Swp.	N	Agri.	Agri.	D	
c. McNeill Creek	WF & Swp.	N	Agri.	Agri.	D	
d. Lake Run (Singletary Lake)	WF & Swp.	N	Agri.	Agri.	D	
(1) Singletary Lake	W	N	Bathing	Bathing	B	Singletary Lake Group Camp
e. Johns Swamp	WF & Swp.	N	Agri.	Agri.	D	
f. Thumb Swamp	WF & Swp.	N	Agri.	Agri.	D	
g. Raccoon Swamp	Swp.	N	Agri.	Agri.	D	
12. Moores Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. White Oak Creek	WF & Swp.	N	Agri.	Agri.	D	
b. Tuckahoe Creek	WF & Swp.	N	Agri.	Agri.	D	
13. Therofare	WF & Swp.	N	Agri.	Agri.	D	
a. Lyon Creek	WF & Swp.	P	WD & Fishing	Fishing	C-Swp.	Commercial Fishing Water
(1) Buckle Creek	WF & Swp.	N	Agri.	Agri.	D	
(a) Little Buckle Cr.	WF & Swp.	N	Agri.	Agri.	D	
F. Catfish Creek	WF & Swp.	N	WD	Drainage	D	Drainage from C. P. & L's Sutton Steam Plant Ash Field
G. Indian Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	

TABLE NO. 24
RECOMMENDED CLASSIFICATIONS
MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
V. Cape Fear River from the upstream mouth of Toomers Creek to Atlantic Ocean	W, Swp., PA	N-P	WD-Fishing	Fishing	SC-Swp.	D.S. from Carolina and Kure Beaches, Wilmington and Southport, and I.W. from Wilmington
A. Toomers Creek	Swp.	N	WS	WS	A-II Swp.	Auxiliary Water Supply for Wilmington
B. Northeast Cape Fear River to Wayne-Duplin County Line	WF & Swp.	GP	WD	Agri.	D	Effluent from Mt. Olive Sewage Plant and I.W. from Mt. Olive Pickle Co.
1. Barlow Branch	PA	GP	WD	Agri.	D	I.W. from Mt. Olive Pickle Company
C. Northeast Cape Fear River from Wayne-Duplin County Line to mouth of Ness Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
1. Buck Marsh	WF & Swp.	N	Agri.	Agri.	D	
2. Goshen Swamp to mouth of Mahunga Swamp	WF & Swp.	N	Agri.	Agri.	D	
a. Youngs Swamp	WF & Swp.	N	Agri.	Agri.	D	
b. Reedy Branch	WF & Swp.	N	WD	Agri.	D	D.S. from Faison and I.W. from Cates Pickle Company
3. Goshen Swamp from mouth of Mahunga Swamp to mouth a. Mahunga Swamp	WF & Swp.	N	Fishing	Fishing	C-Swp.	
4. Grove Creek	WF & Swp.	N	Agri.	Agri.	D	
a. Marsh Branch	WF & Swp.	N	Fishing	Fishing	C-Swp.	Upstream limit of Shad run
5. Persimmon Branch	WF & Swp.	N	Fishing	Fishing	C-Swp.	
6. Limestone Creek	WF & Swp.	N	Agri.	Agri.	D	
7. Maxwell Creek	WF & Swp.	N	Agri.	Agri.	D	
a. Elder Branch	WF & Swp.	N	Fishing	Fishing	C-Swp.	
b. Stocking Head Creek	WF & Swp.	N	Agri.	Agri.	D	
8. Muddy Creek	WF & Swp.	N	Agri.	Agri.	D	

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
9. Cypress Creek	Swp.	N	Agri.	Agri.	D	
a. Black Swamp	Swp.	N	Agri.	Agri.	D	
b. Nine Mile Creek	Swp.	N	Agri.	Agri.	D	
10. Island Creek	WF & Swp.	N-SP	WD-Agri.	Agri.	D	Effluent from Rosehill Sewage Plant
a. Reedy Branch	WF	N	Agri.	Agri.	D	
11. Okie Branch	Swp.	N	Agri.	Agri.	D	
12. Rock Fish Creek	WF & Swp.	N	WD-Fishing	Fishing	C-Swp.	Effluent from Wallace Southwest Sewage Plant
a. Duffs Creek to dam at Lake Tut	W	N	Bathing	Bathing	B	
b. Duffs Creek from dam at Lake Tut to mouth	WF	N	Agri.	Agri.	D	
(1) Taylors Creek	WF	N	Agri.	Agri.	D	
c. Doctors Creek	WF & Swp.	N	Agri.	Agri.	D	
(1) Bulltail Creek	WF & Swp.	N	Agri.	Agri.	D	
(2) Paradise Swamp	WF & Swp.	N	Agri.	Agri.	D	
(3) Mill Creek	WF & Swp.	N	Agri.	Agri.	D	
d. Unnamed tributary	W & Swp.	P	WD	Drainage	D	I.W. from Bonds Abattoir
e. Sills Creek	WF & Swp.	N	Agri.	Agri.	D	
f. Little Rock Fish Creek to dam at Boney's Pond	W & Swp.	N	Fishing	Fishing	C-Swp.	
g. Little Rock Fish Creek from dam at Boney's Pond to mouth	W & Swp.	P	WD	WD	D	J.P. Stevens Company effluent from Wallace Northeast Sewage Plant and storm drain from Wallace.
(a) Unnamed Tributary	PA	P	WD	Drainage	D	I.W. Wallace Pickle Co. and Storm Drainage from Wallace
13. Washington Creek	Swp.	N	Fishing	Fishing	C-Swp.	
14. Lewis Creek	Swp.	N	Fishing	Fishing	C-Swp.	
15. Dero Creek	Swp.	N	Fishing	Fishing	C-Swp.	
16. Holly Shelter Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	State Wildlife Refuge

TABLE NO. 24

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Pro- posed Class	Comments
a. Sandy Run Swamp	Swp.	N	Fishing	Fishing	C-Swp.	
(1) Little Sandy Run Swamp	Swp.	N	Fishing	Fishing	C-Swp.	
b. Shelter Swamp	Swp.	N	Fishing	Fishing	C-Swp.	
c. Moores Creek	Swp.	N	Fishing	Fishing	C-Swp.	
d. Angola Creek (Gum Swamp)	Swp.	N	Fishing	Fishing	C-Swp.	
(1) Bob Creek	Swp.	N	Fishing	Fishing	C-Swp.	
(2) Mocassin Creek	Swp.	N	Fishing	Fishing	C-Swp.	
e. Shaken Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
(1) Juniper Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
17. Ashes Creek	Swp.	N	Fishing	Fishing	C-Swp.	
18. Fishing Creek	Swp.	N	Fishing	Fishing	C-Swp.	
19. Watermellon Run	Swp.	N	Fishing	Fishing	C-Swp.	
20. Peggy Island Creek	Swp.	N	Fishing	Fishing	C-Swp.	
21. Jumping Run	Swp.	N	Fishing	Fishing	C-Swp.	
22. Burgaw Creek	WF & Swp.	N-P	WD & Agri.	Agri.	D	Effluent from Burgaw Sewage Plant
23. Cypress Creek	Swp.	N	Fishing	Fishing	C-Swp.	
24. Gregory Creek	Swp.	N	Fishing	Fishing	C-Swp.	
25. Lillington Creek	Swp.	N	Fishing	Fishing	C-Swp.	
a. Sandhill Creek	Swp.	N	Fishing	Fishing	C-Swp.	
26. Graveyard Creek	Swp.	N	Fishing	Fishing	C-Swp.	
27. Green Oak Creek	Swp.	N	Fishing	Fishing	C-Swp.	
28. McIntire Creek	Swp.	N	Fishing	Fishing	C-Swp.	
29. Pike Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
30. Hawkins Branch	Swp.	N	Fishing	Fishing	C-Swp.	
31. Honey Creek	Swp.	N	Fishing	Fishing	C-Swp.	
32. Harrison Creek	WF & Swp.	N	Agri.	Agri.	D	
a. Godfrey Creek	WF & Swp.	N	Agri.	Agri.	D	
b. Merricks Creek	WF & Swp.	N	Agri.	Agri.	D	
(1) Trumpeters Creek	Swp.	N	Agri.	Agri.	D	
(a) Blossom Swamp	Swp.	N	Agri.	Agri.	D	

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
(2) Catskin Creek	WF & Swp.	N	Agri.	Agri.	D	
(3) Player Creek	WF & Swp.	N	Agri.	Agri.	D	
33. Island Creek	WF & Swp.	N	Agri.	Agri.	D	
34. Old Creek	Swp.	N	Fishing	Fishing	C-Swp.	
35. Sturgeon Creek	WF & Swp.	N	Agri.	Agri.	D	
36. Prince George Creek	WF & Swp.	P	WD & Agri.	Agri.	D	I. W. from Wilmington Packing Co.
37. Turkey Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
38. Long Creek to mouth of Horse Branch including Penderlea Lake	WF & Swp.	N	Agri.	Agri.	D	
a. Horse Branch	WF & Swp.	N	Agri.	Agri.	D	
(1) Long Branch	WF & Swp.	N	Agri.	Agri.	D	
39. Long Creek from mouth of Horse Branch to mouth	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. Rileys Creek	WF & Swp.	SP	WD & Agri.	Agri.	D	I.W. from Rooks Packing Co.
(1) Resoc Creek	WF & Swp.	N	Agri.	Agri.	D	
(2) Bich Creek	WF & Swp.	N	Agri.	Agri.	D	
(3) Mill Creek	WF & Swp.	N	Agri.	Agri.	D	
(4) Kellys Creek	WF & Swp.	N	Agri.	Agri.	D	
b. Morgans Creek	WF & Swp.	SP	Agri.	Agri.	D	I.W. from Pender Packing Co.
40. Fishing Creek	WF & Swp.	N	Agri.	Agri.	D	
41. Dock Creek	WF & Swp.	N	Agri.	Agri.	D	
D. Northeast Cape Fear River from mouth of Ness Creek to mouth	WF & Swp.	N	Fishing	Fishing	SC	
1. Ness Creek	WF & Swp.	N	Agri.	Agri.	D	D.S. & I.W. from Wilmington,
2. Smith Creek	WF & Swp.	N	Agri.	Agri.	D	I.W. from Wanets Sausage Co. & Timme Corp. and D. S. from New Hanover Prison Camp

TABLE NO. 24

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief		Proposed Class	Comments
			Present Usage	Best Usage		
a. Burnt Mill Creek	HDA	SP	Drainage	Drainage	D	Local contamination & storm drainage from Wilmington
(1) Mineral Springs Branch						
E. Alligator Creek	HDA	N	Drainage	Drainage	D	Storm drainage from Wilmington
F. Greenfield Creek	Swp.	N	Fishing	Fishing	SC-Swp.	
1. Greenfield Lake	Swp.	N	Drainage	Drainage	SD	
G. Redmond Creek	HDA	N	Fishing	Fishing	C-Swp.	Greenfield Lake Recreation Park
H. Brunswick River	Swp.	N	Fishing	Fishing	C-Swp.	
	Swp.	N	Navigation	Fishing	SC-Swp.	U.S. Maritime Commercial Ship Storage Area, Commercial Fish- ing Waters
1. Mill Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. Sturgeon Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
2. McIlhennys Pond Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
a. Jackeys Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
b. Piney Branch	WF & Swp.	N	Fishing	Fishing	C-Swp.	
I. Mallory Creek	Swp.	N	Fishing	Fishing	C-Swp.	
J. Barnards Creek	Swp.	N	Fishing	Fishing	C-Swp.	
K. Beaver Dam Creek	Swp.	N	Fishing	Fishing	C-Swp.	
L. Town Creek	Swp.	N	Fishing	Fishing	C-Swp.	
1. Rattlesnake Branch	WF & Swp.	N	Agri.	Agri.	D	
a. Beaver Dam Swamp	WF & Swp.	N	Agri.	Agri.	D	
2. Lewis Swamp	W & Swp.	N	Agri.	Agri.	D	
a. Tomblin Creek	WF & Swp.	N	Agri.	Agri.	D	
b. Lewis Branch	WF & Swp.	N	Agri.	Agri.	D	
3. Russells Swamp	Swp.	N	Agri.	Agri.	D	
4. Rices Creek	Swp.	N	Agri.	Agri.	D	
a. Bells Swamp Creek	WF & Swp.	N	Agri.	Agri.	D	
b. Mills Creek	Swp.	N	Agri.	Agri.	D	
(1) Harris Swamp Branch	Swp.	N	Agri.	Agri.	D	

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Proposed		Comments
				Best Usage	Class	
5. Morgan Branch	WF & Swp.	N	Agri.	Agri.	D	
6. Goodman Branch	WF & Swp.	N	Agri.	Agri.	D	
7. Dews Branch	Swp.	N	Agri.	Agri.	D	
M. Todds Creek	Swp.	N	Agri.	Agri.	D	
N. Sand Hill Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
O. Lords Creek (Mott Creek)	Swp.	N	Agri.	Agri.	D	
P. Lilliput Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
1. Allen Creek	WF	N	Agri.	Agri.	D	
2. Pretty Pond	W	N	Bathing	Bathing	B	
3. Orton Creek	WF & Swp.	N	Fishing	Fishing	C-Swp.	
4. Moors Creek	WF & Swp.	N	Agri.	Agri.	D	
5. Intercoastal waterway from edge of White Oak River Basin to Western end of Snows Gut exclusive of the restricted areas	Swp. & SD	N	Shell-fishing	Shell-fishing	SA-Swp.	
1. Turkey Creek	Swp.	N	Shell-fishing	Shell-fishing	SA-Swp.	
2. Restricted Area (Kings Creek-Stump Sound) inside a line beginning at a point on the mainland and running due south 100 yards to reflector buoy No. 43 in the Intracoastal Waterway, thence along the south side of the Intracoastal Waterway channel 1,200 yards to Flashing Light Channel Marker No. 39, thence due north 200 yards to a point on the mainland, then along the shore line to the point of beginning to include all of King Creek.	Swp.	P	Fishing	Fishing	C-Swp.	Effluent from the Holly Ridge Sewage Plant
3. Hardison Creek	Swp.	N	Shell-fishing	Shell-fishing	SA-Swp.	
4. Barlow Creek	Swp.	N	Shell-fishing	Shell-fishing	SA-Swp.	
5. Bishop Creek	Swp.	N	Shell-fishing	Shell-fishing	SA-Swp.	
6. Virginia Creek	Swp.	SP	Fishing	Fishing	SC	Drainage from Pender Farms Piggery

TABLE NO. 24
RECOMMENDED CLASSIFICATIONS
MAIN RIVER DRAINAGE AREA

Streams*	Character of District		Condition of Waters	Chief Present Usage		Proposed Class	Comments
a. Mullet Run Creek	Swp.		N	Fishing	Fishing	SC	
7. Old Topsail Creek	Swp.		N	Shell-fishing	Shell-fishing	SA-Swp.	
8. Batts Creek	Swp.		N	Shell-fishing	Shell-fishing	SA-Swp.	
9. Pages Creek	Swp.		N	Shell-fishing	Shell-fishing	SA-Swp.	
10. Howc Creek	Swp.		N	Shell-fishing	Shell-fishing	SA-Swp.	
11. Restricted Area (Wrightsville Area) Swp., SD&PA			N-SP	Fishing	Fishing	SC-Swp.	
In any of the waters within a line beginning at the point of beach on the northeast shore of Masonboro Inlet extending in a northeasterly direction along the shore of the Atlantic Ocean to a point on the shore 1,100 yards beyond the northeast shore of Moore Inlet, thence due northwest through Channel Marker #124 of the Intracoastal Waterway to a point on the mainland, thence in a southwesterly direction along the mainland to a point on Money Point, thence due southeast through the Intracoastal Waterway Channel Marker #128 to the point of beginning to include a slough known as Moore Creek, Stokley Cut, Bowden Cut, Banks Channel, Wrightsville Cut, Shin Creek, Bradley Creek to its beginning, that portion of the Intracoastal Waterway between Channel Marker #124 and 128, and all tidal creeks on the northwest side of the Intracoastal Waterway between these markers exclusive of bathing area noted below.							
12. Wrightsville Sound Bathing Area SD & PA			N	Bathing	Bathing	SB	Wrightsville Sound Bathing Area. Inside a line beginning at the point of beach on the northeast shore of Masonboro Inlet and running in a northeasterly direction along the northwest shore of Wrightsville Beach Island (Sound Side) to the causeway to the sewage treatment plant, thence northerly along the sound side of the causeway to the north end of same, thence in a southwesterly direction to the northeast end of Harbour Island (Mary Island), thence along the southeast shore of Harbour Island to the southwest end, thence in a southwesterly direction along the southeast boundaries of the marshes to a point opposite Ref. Marker "7", thence due south to the point of beginning, exclusive of the marsh sloughs tributary to the sound.
13. Hewlets Creek	Swp.		N	Shell-fishing	Shell-fishing	SA-Swp.	
14. Purviance Creek	Swp.		N	Shell-fishing	Shell-fishing	SA-Swp.	

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Proposed		Comments
				Best Usage	Class	
15. Everett Creek	Swp.	N	Shell- fishing	Shell- fishing	SA-Swp.	
16. Restricted Area (Myrtle Sound Area) within a line beginning at Picket Rock and running southeast to the Intracoastal Waterway Channel Marker No. 153, thence running south-southeast to the south side of the Carolina Beach Inlet, thence in a southerly direction along the shore line through the Carolina Beach boat basin, thence in a northerly direction along the shore line to the south bank of Snows Cut, thence along the south bank of Snows Cut to the Cape Fear River, thence in a straight line to the north bank of Snows Cut, thence along the shore line in an easterly direction to the western side of Myrtle Sound, thence in a northerly direction along the shoreline to the point of beginning.	Swp., SD&PA	N-SP	Fishing	Fishing	SC-Swp.	
S. Restricted Area (Lower Cape Fear Area No. 12) inside a line beginning in Cape Fear River at the mouth of Snows Cut and running in a southerly direction along the shore line to the Basin breakwater, thence along the breakwater to its southwestern end, thence in a southwesterly direction along the eastern side of Muddy Slough to a point on the southern side of Cedar Creek, thence in a southwesterly direction across the mouth of Cape Fear River to a point on the southwestern side of the mouth of Baldhead Creek, thence across the mouth of Cape Fear River to the eastern end of Oak Island, thence in a northwesterly direction along the Atlantic Ocean to a point on the beach, thence due north through the Intracoastal Waterway channel marker FL, R. "22" to the mainland, thence along the shoreline in an easterly direction to the eastern side of the boat basin at Southport, thence in a northerly direction to Andersons Landing, thence in a straight line across Cape Fear River to the point of beginning, to include Muddy Slough, Elizabeth River, Molasses Creek, Denis Creek, Beaverdam Creek, Dutchman Creek, Price Creek, Walden Creek, Governors Creek and Snows Marsh exclusive of shellfish areas noted below.	Swp., SD&PA	SP	Fishing	Fishing	SC-Swp.	
1. Elizabeth River - That section of Elizabeth River within a line beginning at the mouth of Molasses Creek and running northeast to a point of marsh at the junction of Elizabeth River and Dutchman Creek, thence in a northwesterly direction along the north bank of the river to the southside of the Intracoastal Waterway, thence in a westerly direction along the south side of the Intracoastal Waterway to the mouth of Denis Creek, thence in a southeasterly direction along the south bank of the river to the point of beginning, including Molasses Creek, Denis Creek, and all other tributaries within this line.	Swp. & SD	SP	Fishing	Shell- fishing	SA	

TABLE NO. 24
RECOMMENDED CLASSIFICATIONS
MAIN RIVER DRAINAGE AREA

Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
2. Dutchman Creek - That section of Dutchman Creek within a line beginning at a point of marsh at the junction of Dutchman Creek and Elizabeth River and running due north to a point of marsh on the north bank of Dutchman Creek, thence in a northwesterly direction along the east bank to the south side of the Intracoastal Waterway, thence in a westerly direction along the south side of the Intracoastal Waterway to the west bank of Dutchman Creek, thence in a southeasterly direction to the point of beginning, including all tributaries within this line.	Swp. & SD	SP	Fishing	Shell-fishing	SA	
T. Restricted Area (Lower Cape Fear Area 13) inside a line beginning at the northern end of the breakwater at the Basin and running in a southerly direction along the breakwater to its southwestern end and continuing in a southwesterly direction along the eastern side of Muddy Slough to a point on the southern side of Cedar Creek, thence in a southwesterly direction across the mouth of Cape Creek to a point on the southwestern side of the mouth of Baldhead Creek, thence along the shoreline to Smith Island to Buzzard Bay Inlet, thence in a northerly direction along the Atlantic Ocean shore to the northern side of Corncake Inlet, thence in a northeasterly direction along the Atlantic Ocean Shore to the northern side of New Inlet, thence along the shoreline of the Basin to the point of beginning to include the Basin, Zekes Island, Still Creek, Cedar Creek, Cape Creek, Bay Creek, Baldhead Creek, Deep Creek, Fishing Creek and Buzzard Bay.	Swp. & SD	N	Shell-fishing	Shell-fishing	SA	The regulation creating this Restricted Area may be rescinded for short periods by the Commissioner of Commercial Fisheries after bacteriological studies made by the State Board of Health show the waters of the described territory to be free from dangerous pollution.
U. Atlantic Ocean - the water of the Atlantic Ocean contiguous to that portion of the Cape Fear River Basin that extends from the edge of the White Oak River Basin to the southwestern end of Smith Island at a point called Baldhead.	SD	N	Bathing	Bathing	SB	Includes Surf City Beach, Topsail Beach, Wrightsville Beach, Carolina Beach, Hamby Beach, Wilmington Beach, and Kure Beach. Effluent from Wrightsville Beach Sewage Plant.

RECOMMENDED CLASSIFICATIONS

MAIN RIVER DRAINAGE AREA

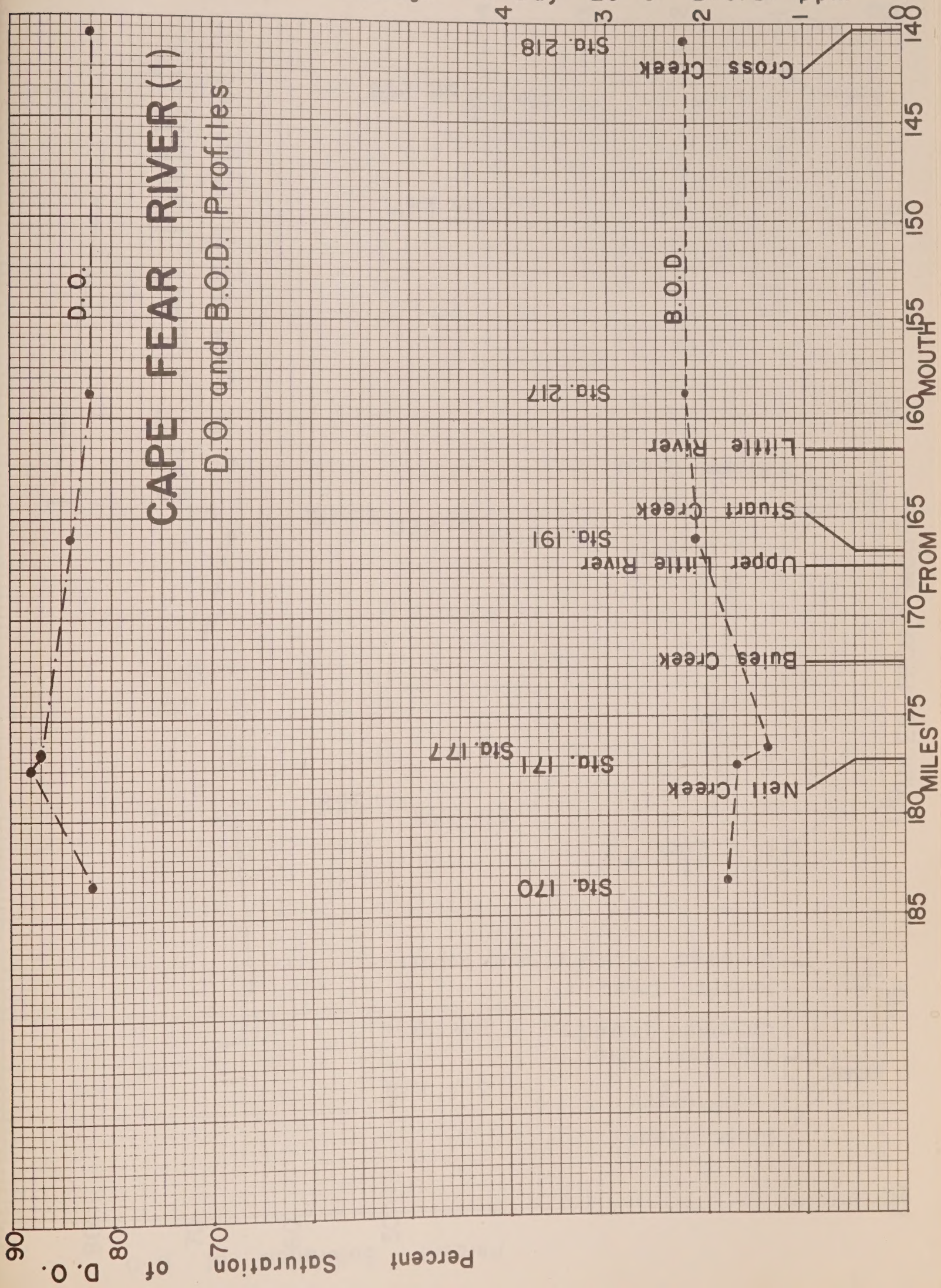
Stream*	Character of District	Condition of Waters	Chief Present Usage	Best Usage	Proposed Class	Comments
V, Atlantic Ocean - the waters of the Atlantic Ocean contiguous to that portion of the Cape Fear River Basin that extends from the eastern end of Oak Island to the eastern edge of the Lumber River Basin.	SD	N	Bathing	Bathing	SB	Includes Fort Caswell Beach, Yapon Village Beach, and Long Beach, D. S. from Fort Caswell Assembly Grounds.

CAPE FEAR RIVER (I)

D.O. and B.O.D. Profiles

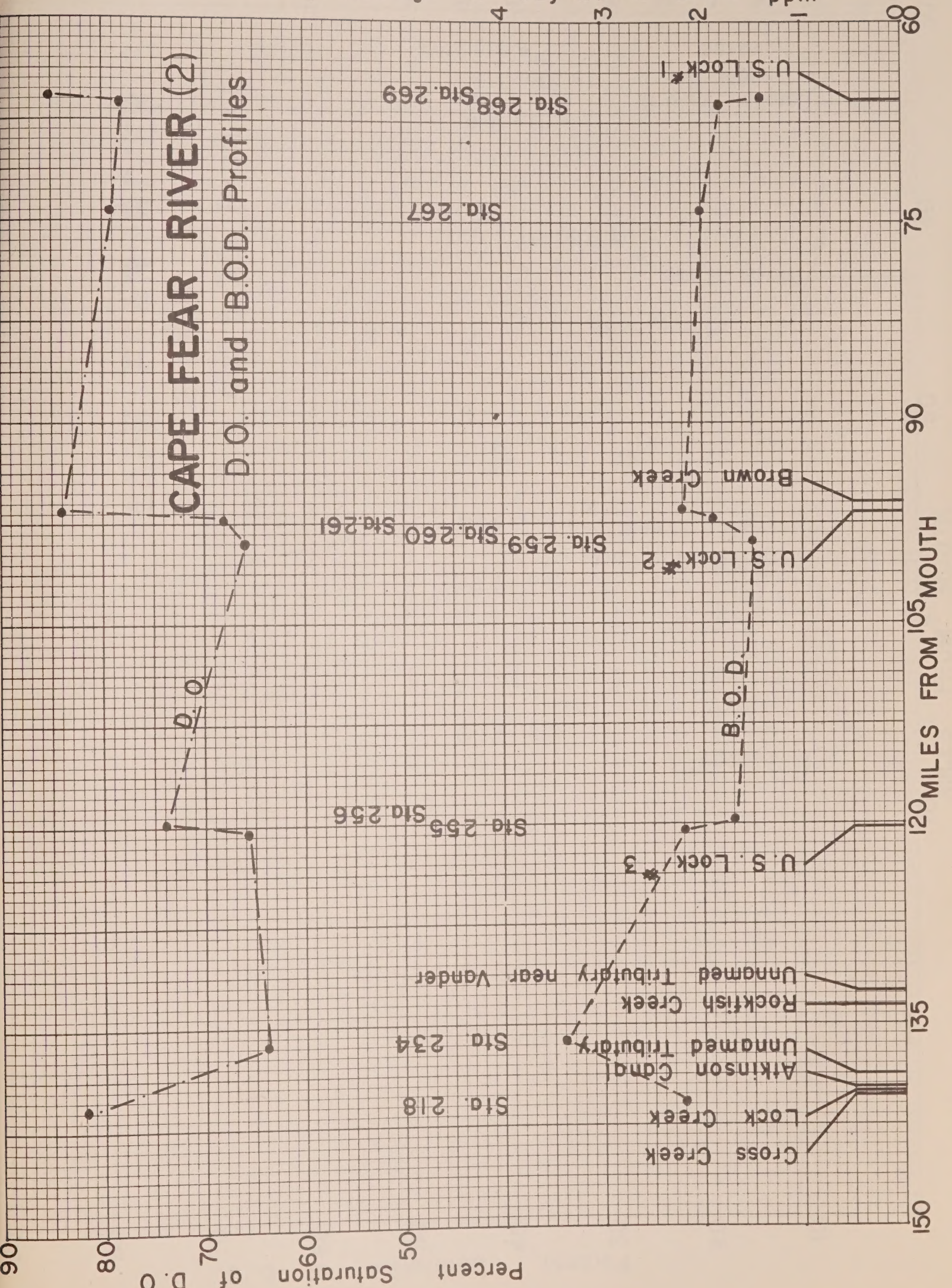
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CAPE FEAR RIVER (2)

D.O. and B.O.D. Profiles

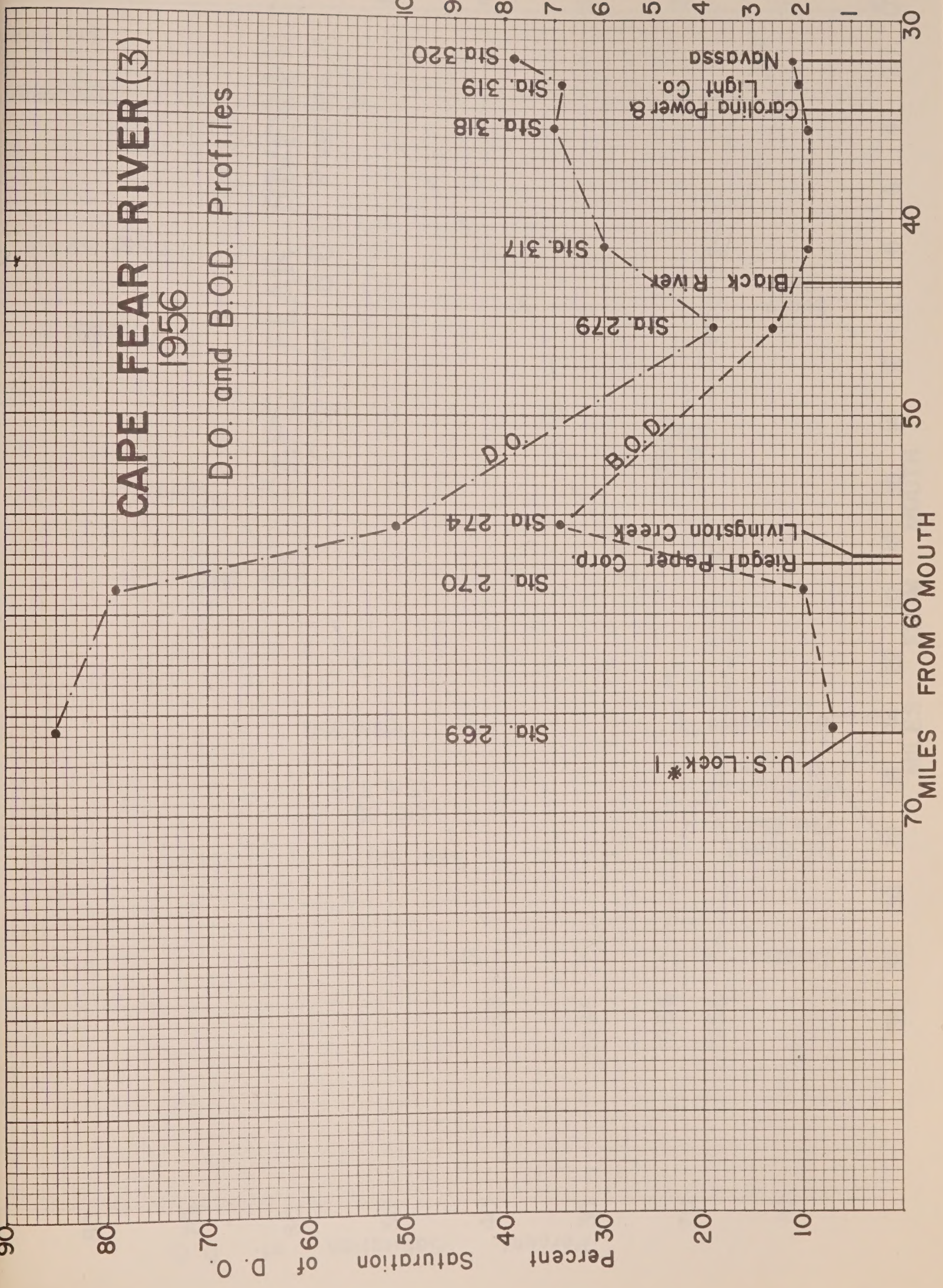


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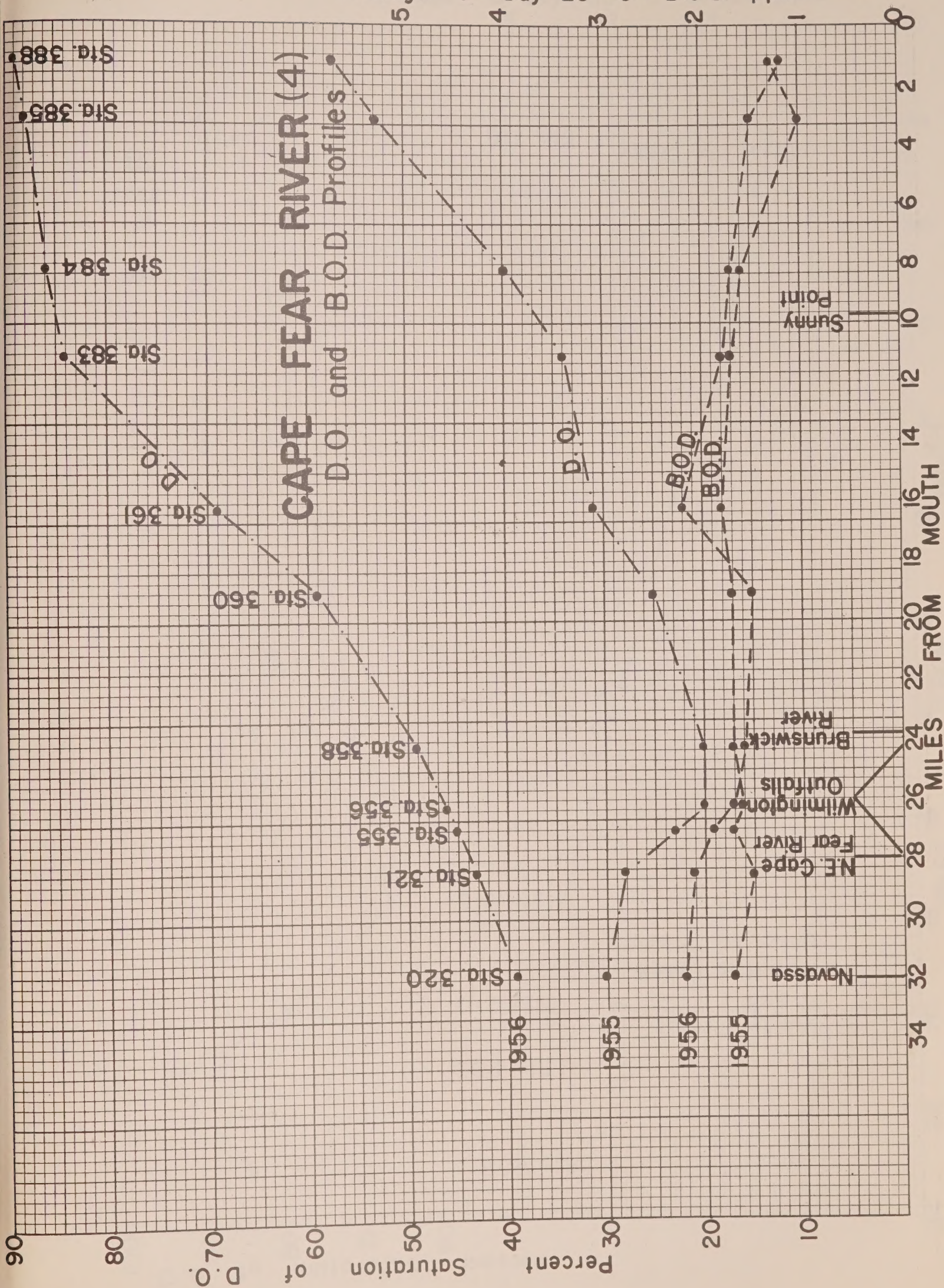
CAPE FEAR RIVER (3)

1956

D.O. and B.O.D. Profiles



Average 5 Day 20 °C B.O.D. ppm 593



LITTLE RIVER

D.O. and B.O.D. Profiles

Percent Saturation of D.O.

Average 5 Day 20 °C B.O.D. ppm.

595

Sta. 216

Stewart's Creek

Sta. 215

Muddy Creek
McDuffie Creek
Unnamed Tributary

Sta. 210

Sta. 209

Sta. 208

D.O.

B.O.D.

10 MOUTH

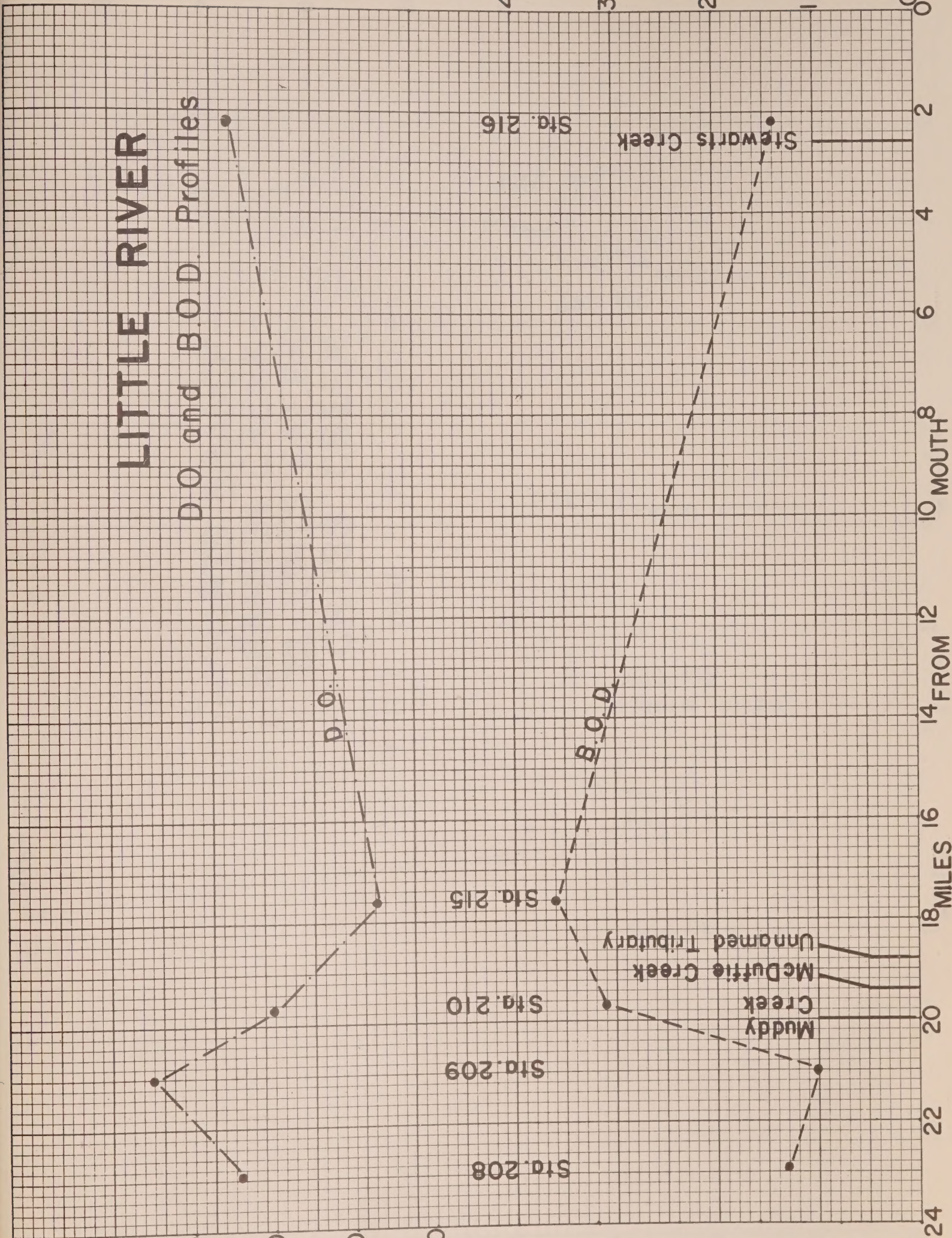
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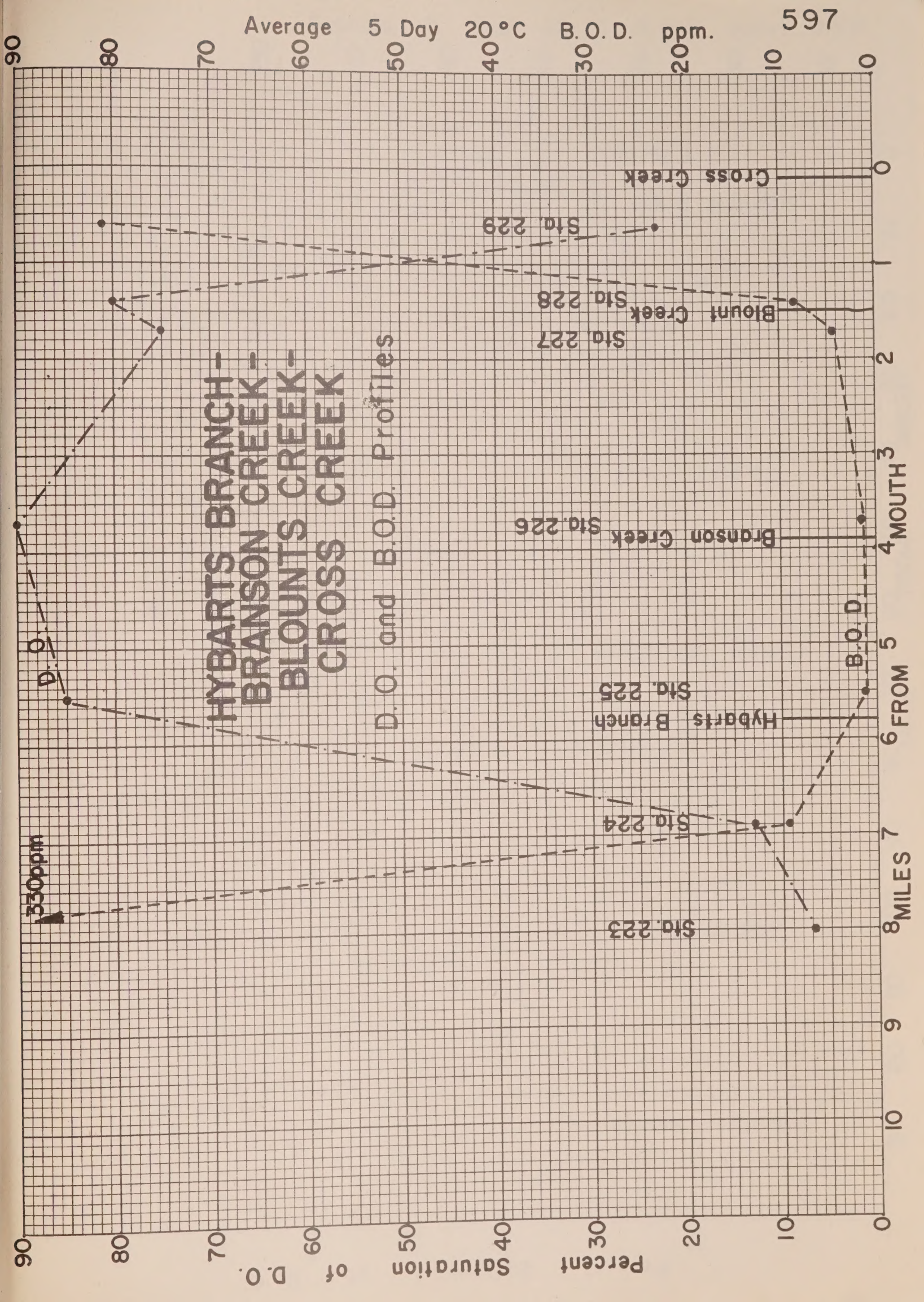
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22

24



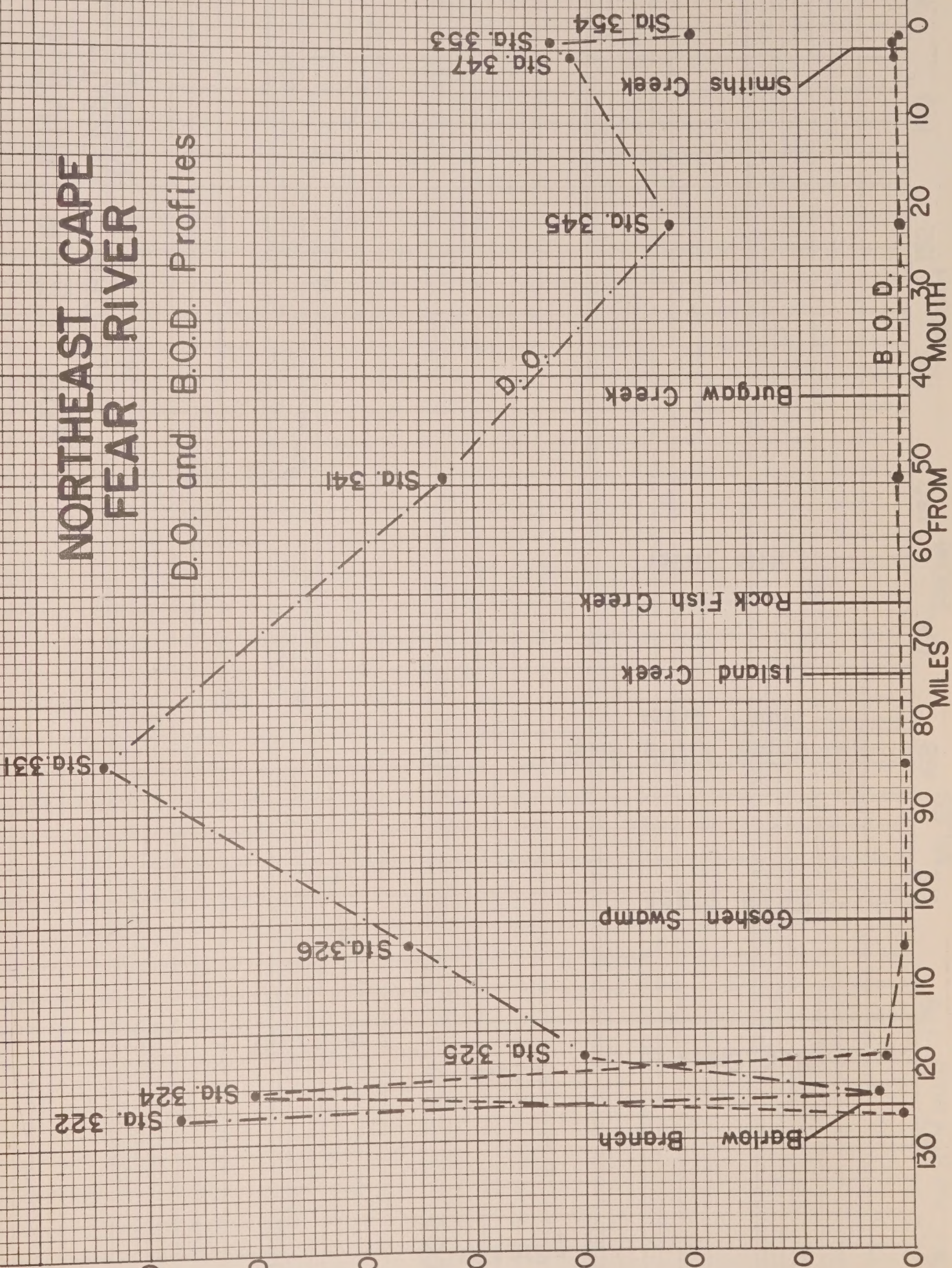


NORTHEAST CAPE FEAR RIVER

D.O. and B.O.D. Profiles

Percent Saturation of D.O.

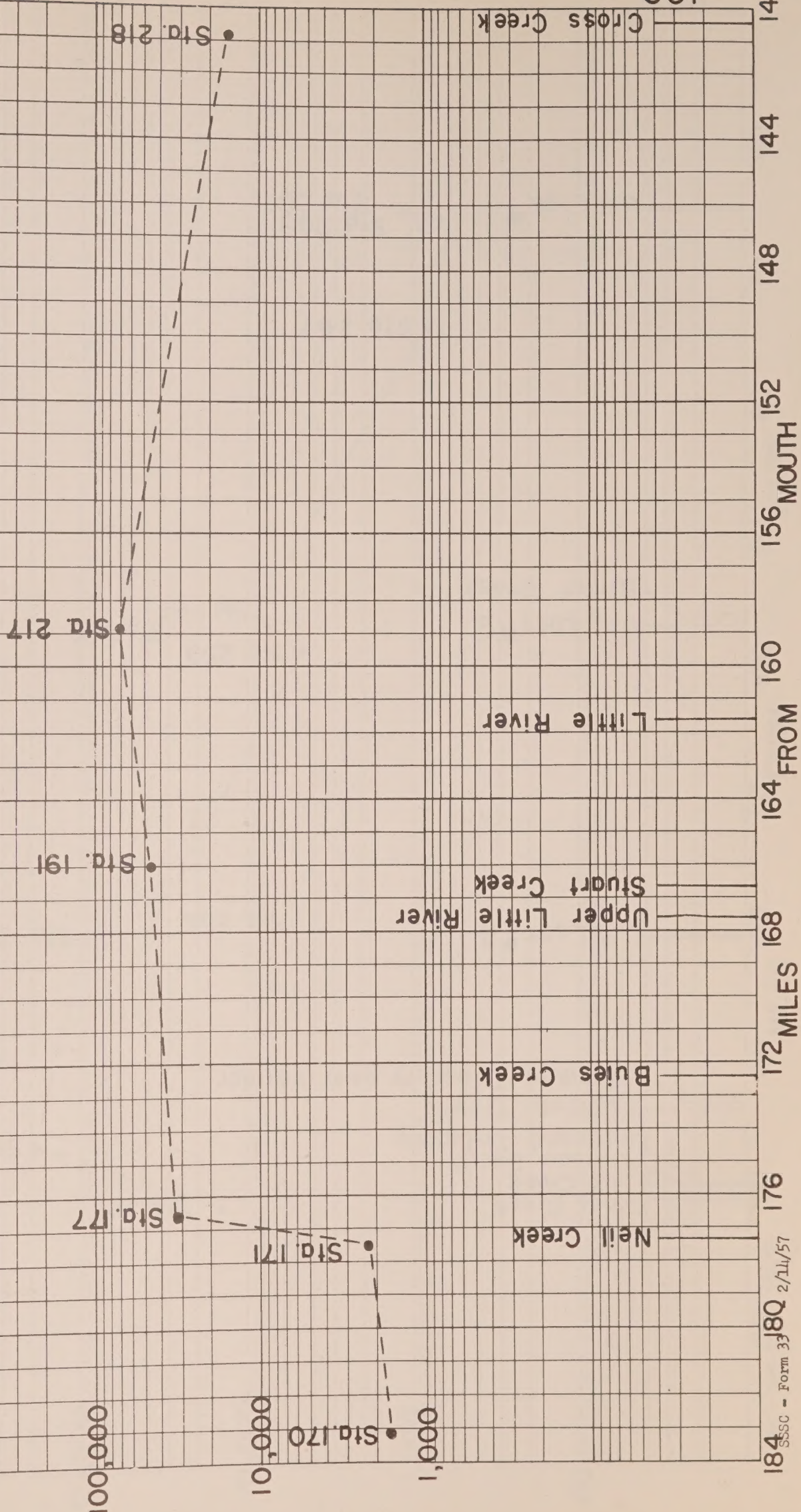
Average 5 Day 20 °C B.O.D. ppm 599



CAPE FEAR RIVER (11)

COLIFORM DENSITY

MPN Per 100 ML



CAPE FEAR RIVER (2)

COLIFORM DENSITY

MPN Per 100 ML

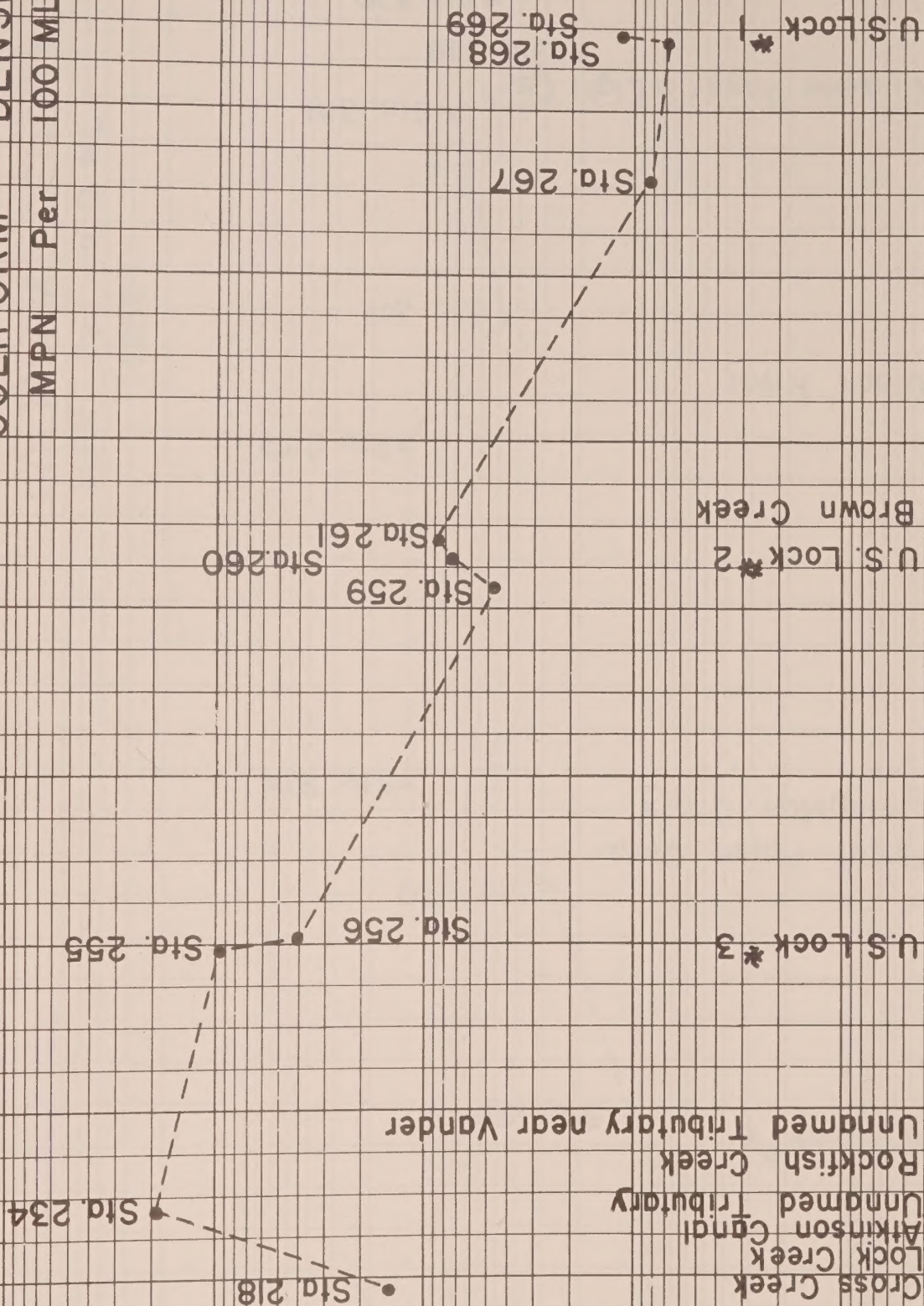
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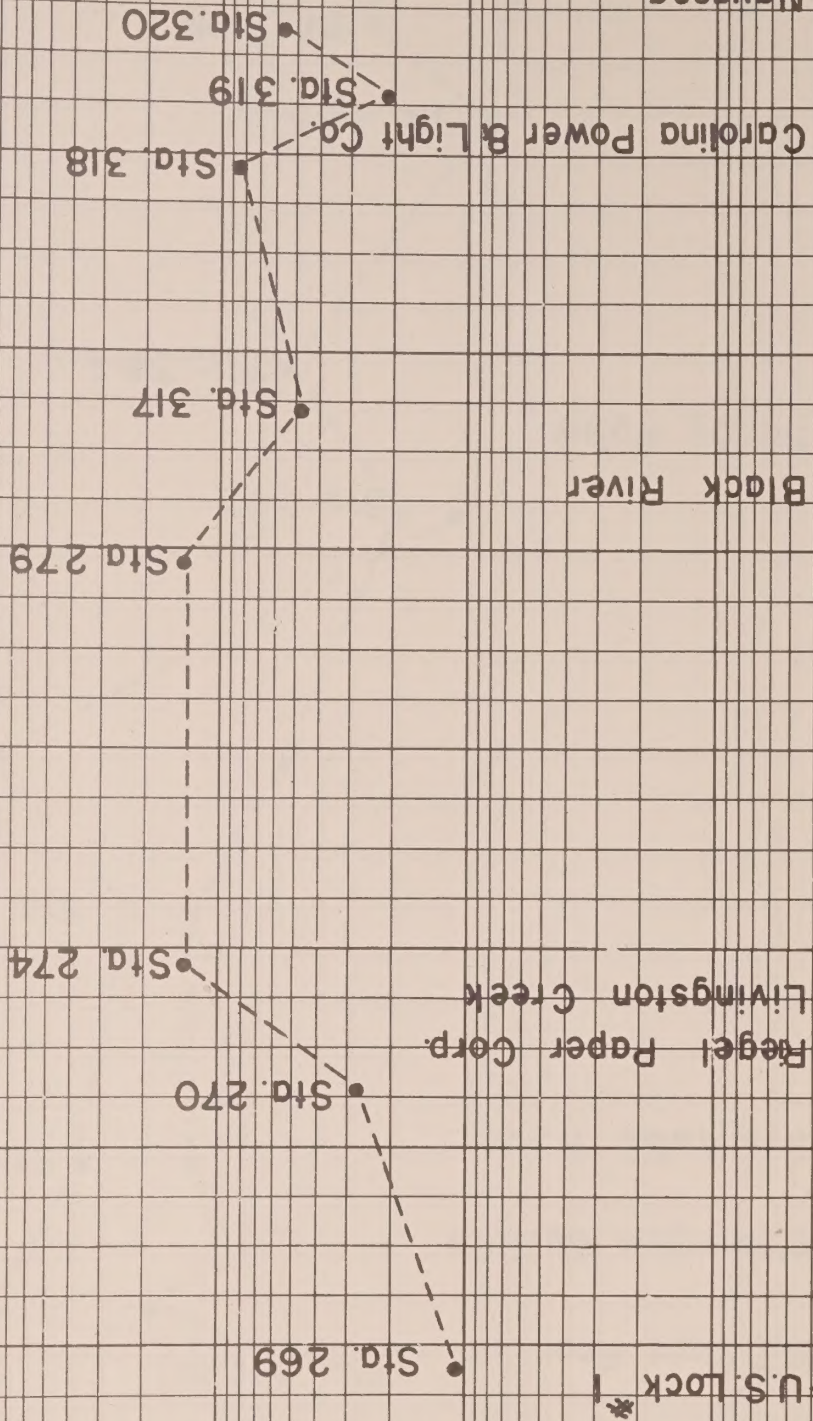


CAPE FEAR RIVER (3)

COLIFORM DENSITY

MPN Per 100 ML

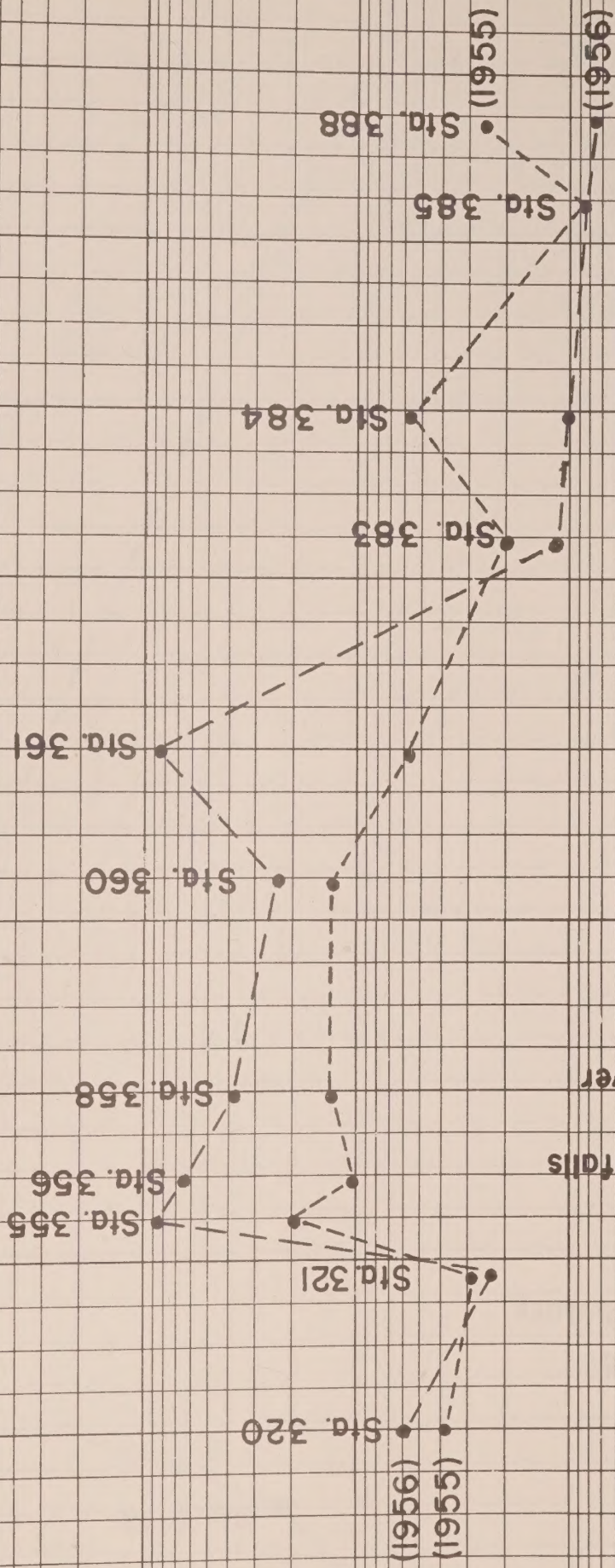
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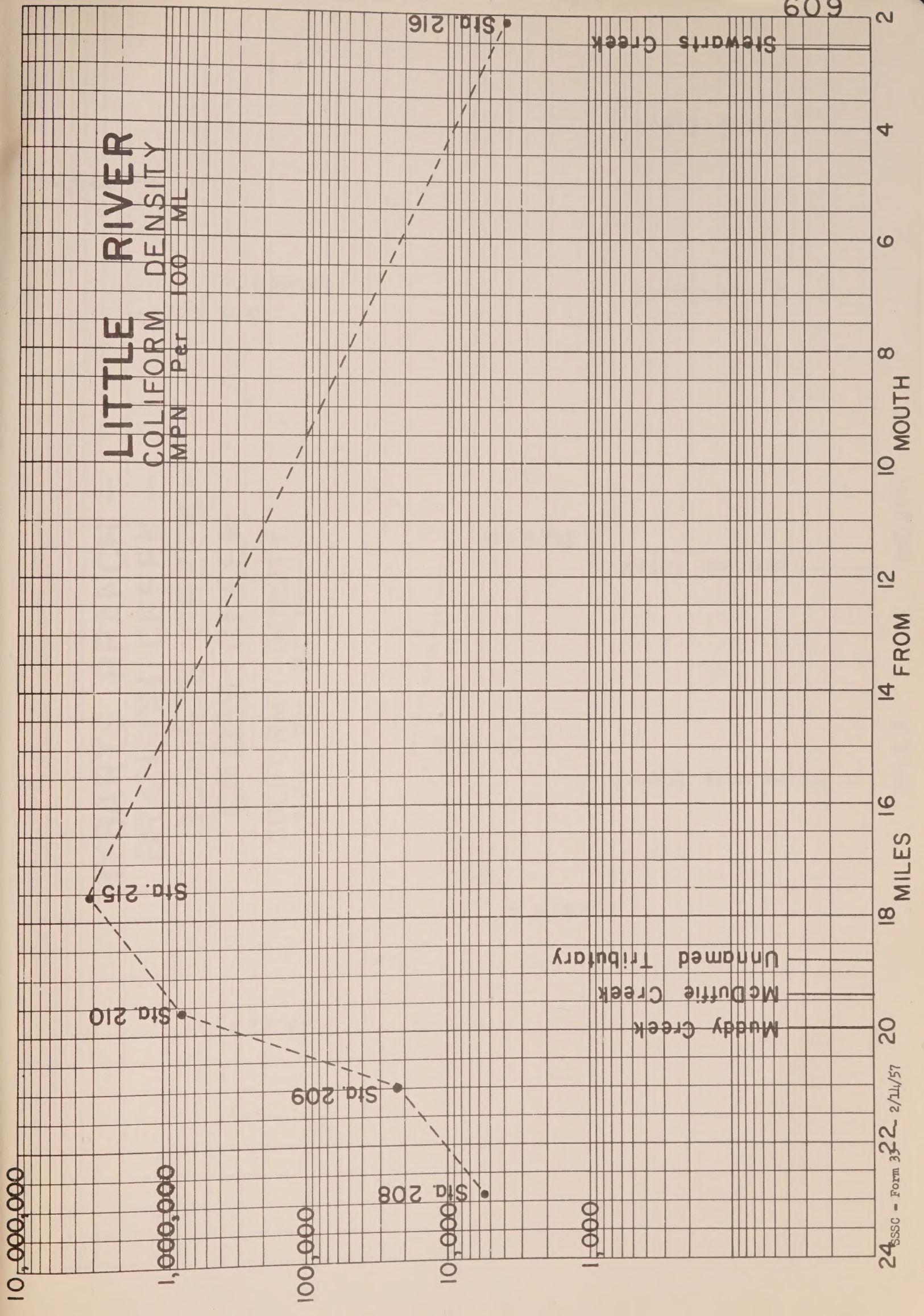


CAPE FEAR RIVER (4)

COLIFORM DENSITY

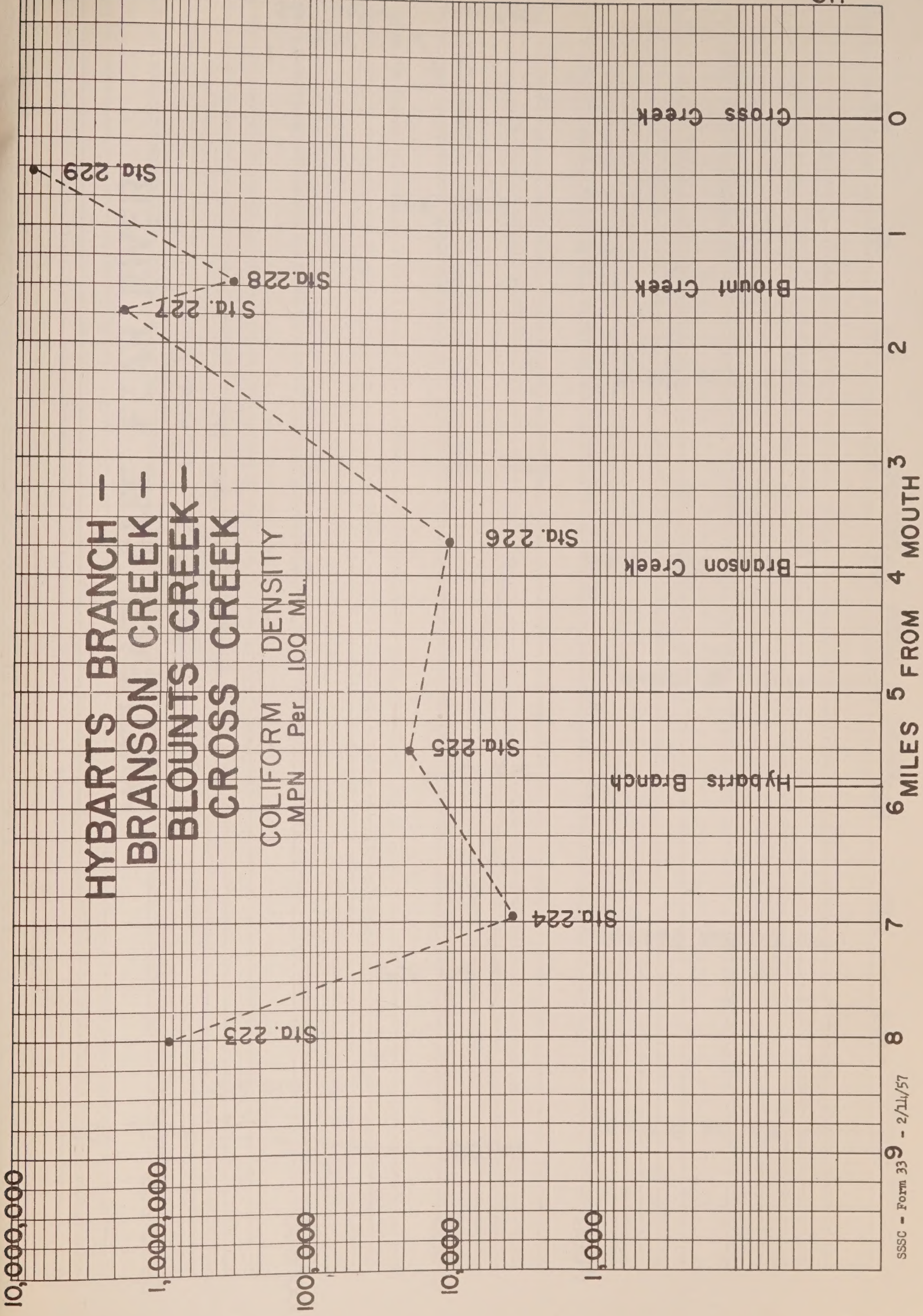
MPN Per 100 ML.





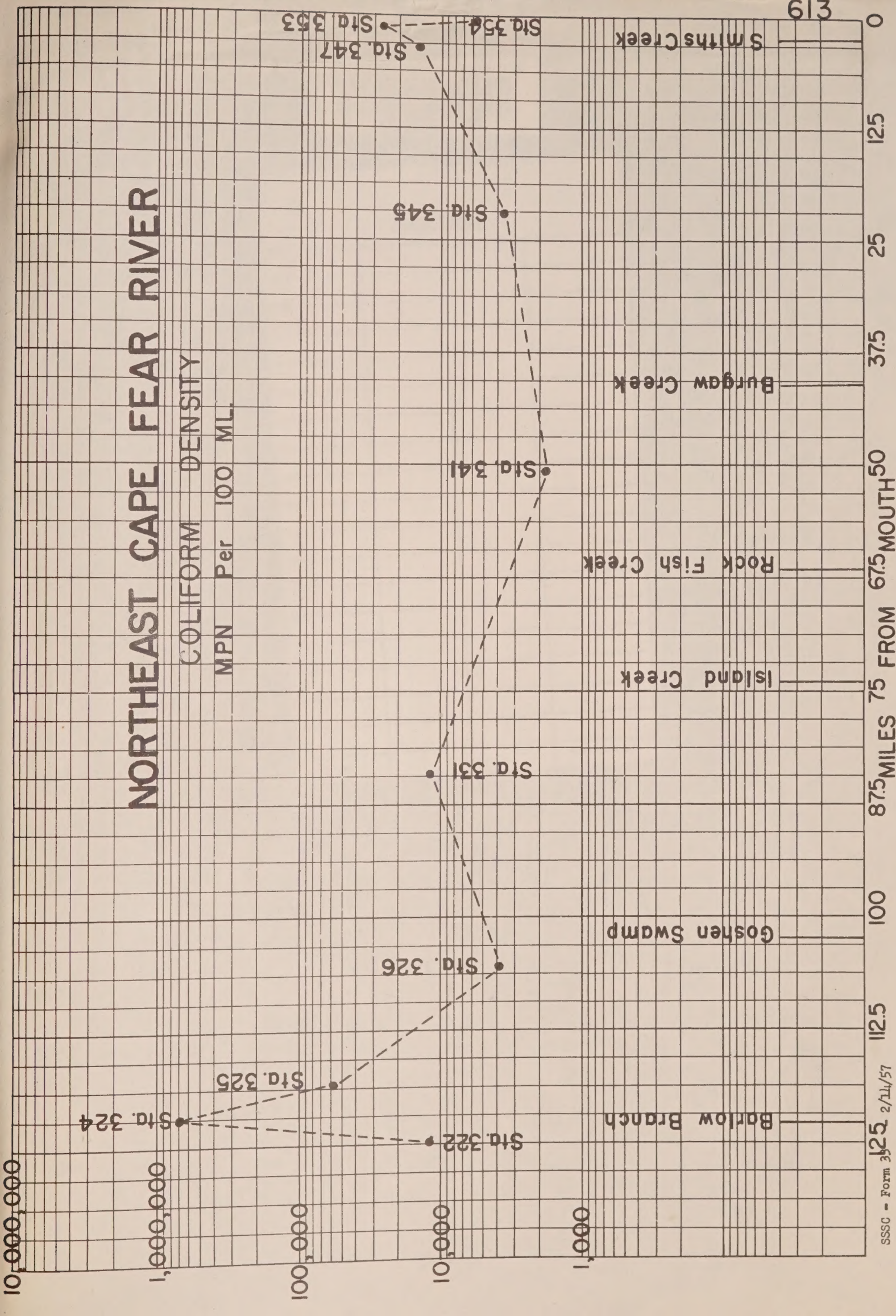
HYBARTS BRANCH - BRANSON CREEK - BLOUNTS CREEK - CROSS CREEK

COLIFORM DENSITY
MPN Per 100 ML.



NORTHEAST CAPE FEAR RIVER

COLIFORM DENSITY
MPN Per 100 ML



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